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MANAGEMENT DIRECTION STATEMENT

AND ECOSYSTEM MANAGEMENT PLAN

November 2006

for Entiako Provincial Park and Entiako Protected Area

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Entiako Provincial Park and Entiako Protected Area

Management Direction Statement

Approved by:

Date: Nov. 16, 2006

Hugh Markides Regional Manager
Environmental Stewardship Division

Date: Dec. 11, 2006

Nancy Wilkin
Assistant Deputy Minister
Environmental Stewardship Division

Entiako Provincial Park and Protected Area

Foreword

The Provincial Government established Entiako Provincial Park (47,699 ha) under the *Park Act* in 1999. Mineral claims in the Wolf (4600 ha) and Capoose (500 ha) areas, which were partly enclosed by Entiako Provincial Park, are being incorporated into the park as claims lapse. In 2004, the *Protected Areas of British Columbia Act* was amended to include lapsed claims into Entiako Provincial Park resulting in a total park size of 50,681 ha. Since then, additional claims have lapsed and will be incorporated into the park. Currently only one claim (Capoose area) is still active. Entiako Protected Area (73,268 ha) was established under the *Environment and Land Use Act* in 2001. Entiako Provincial Park and Protected Area were established to protect high value caribou winter habitat and representative ecosystems. The area is the core of the Tweedsmuir-Entiako caribou winter range and is completely unroaded with minimal infrastructure. Designation followed the recommendations of the Vanderhoof and the Lakes Land and Resource Management Plans.

Implementation of strategies identified in the Management Direction Statement will be dependent on available funding and agency priorities.

This management direction statement was developed in consideration of direction from the Vanderhoof Land and Resource Management Plan and the Lakes Land and Resource Management Plan.

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Introduction

Purpose

This management direction statement (MDS) provides strategic management direction for Entiako Provincial Park and Protected Area and includes an Ecosystem Management Plan (EMP). Management direction statements do not negate the need for future more detailed management plans. This MDS/EMP describes protected area values, presents direction from other planning processes, provides specific information on ecosystem components, identifies management issues and offers priority management strategies. Strategies will be ranked according to priority and completed as funding permits. All development associated with these strategies is subject to BC Parks' Impact Assessment Policy.

Setting and Context

Entiako Provincial Park and Protected Area lies adjacent to the eastern boundary of Tweedsmuir Provincial Park, approximately 100 km south of Burns Lake and 80 km north of Anahim Lake (Figure 1). Combined, the park and protected area encompasses 123,949 hectares; the boundary extends east from the central portion of Tweedsmuir Park along the south shore of Tetachuck Lake to Natalkuz Lake (Nechako Reservoir), continues east along the lakeshore for approximately 12 km then south-west to include the northern portion of the Fawnie Mountains, and back to the Tweedsmuir Park boundary (Figure 2).

Entiako Protected Area (73,268 ha) was established under the *Environment and Land Use Act* in 2001 as recommended by the Lakes Land and Resource Management Plan (LRMP). The Lakes LRMP also recommended that the protected area be designated as Class A Park once an ecosystem based management plan is completed, which meets the dual objectives of conserving caribou habitat and mountain pine beetle management.

Entiako Provincial Park, at 48,261 ha, was originally established under the *Park Act* in 1999 as recommended by the Vanderhoof Land and Resource Management Plan. Two areas of mineral claims (Wolf – 4,600 ha, Capoose – 500 ha), which were partly enclosed by Entiako Provincial Park, are being incorporated into the Park as claims lapse. In 2004, the Park Act was amended to include lapsed claims into Entiako Provincial Park, resulting in a total park size of 50,681 ha. Since then, additional claims have lapsed and will be incorporated into the park. Currently, only one mineral claim (Capoose area) is still active.

The northern portion of Entiako Protected Area lies within the asserted territory of the Cheslatta Carrier Nation and all of Entiako Provincial Park and Protected Area lies within the traditional use area of the Ulkatcho First Nation.

Originally, Entiako Provincial Park and Protected Area were part of Tweedsmuir Park, which was established in 1938 to protect a wilderness chain of lakes. In 1956, the Tweedsmuir Park boundary was amended to exclude all waterbodies flooded by the recently constructed Kenney Dam and to include more area in the southern mountainous region; at that time, the Entiako area was removed from the park.

Entiako Provincial Park and Protected Area is comprised of mostly low elevation flat or gently rolling terrain with the Fawnie Mountains rising up in the eastern part of the area. The lower

Figure 1

Figure 1. Location of Entiako Park and Protected Area

Figure 2

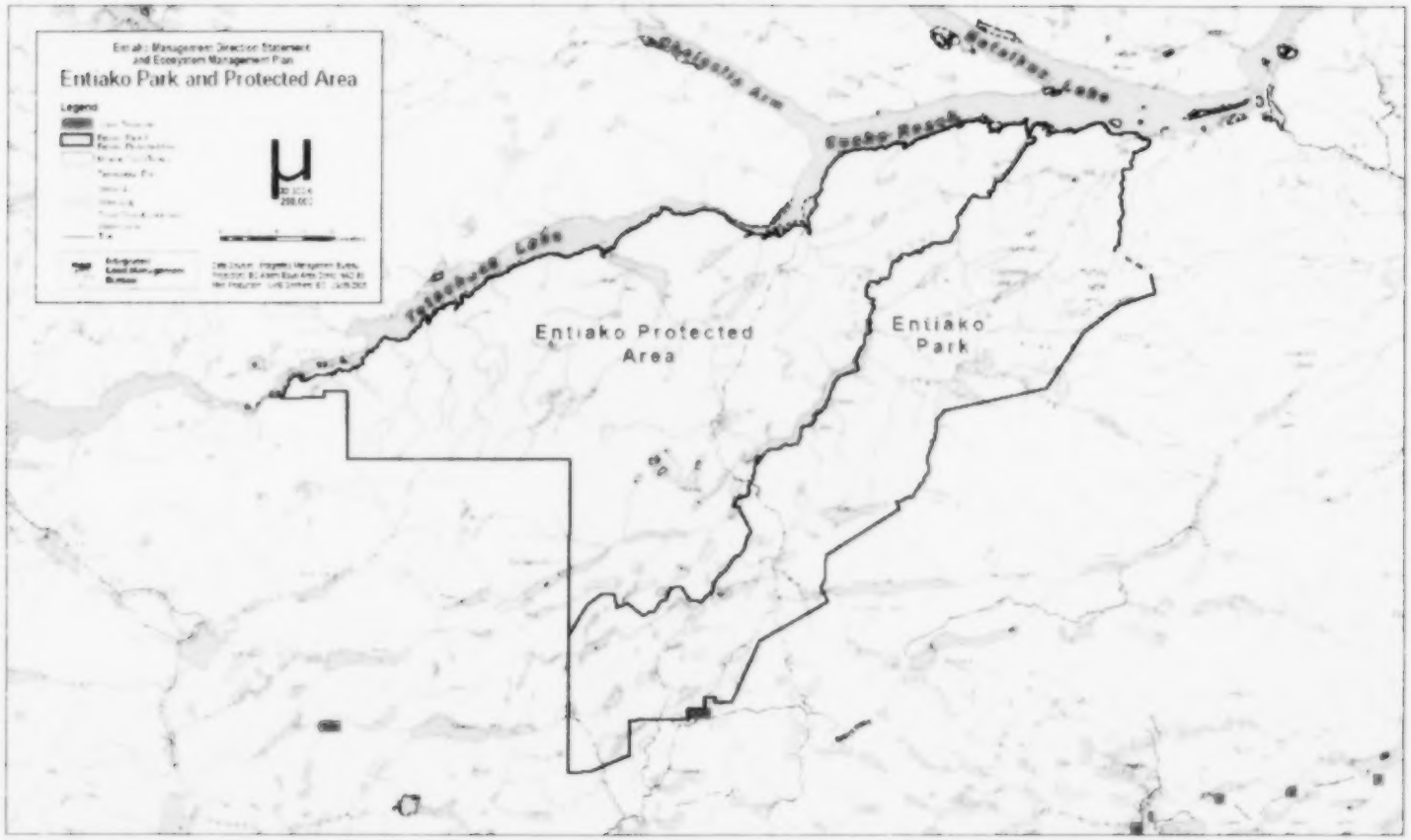

Figure 2. Entiako Park and Protected Area

elevation portion is dominated by lodgepole pine forests with scattered wetlands, lakes and rivers. Higher elevations in the Fawnie Mountains contain both alpine and forested subalpine vegetation. Lying in the rainshadow of the Coast Mountains, the Entiako experiences a dry, continental climate with relatively low precipitation in both summer and winter. The park and protected area is an unroaded wilderness area; access is mainly by air or by water from the Nechako Reservoir. On land, some logging roads terminate near the southern boundary of Entiako Provincial Park and the Bella Coola Trail provides trail access from the south. The Bella Coola Trail connects with the Alexander Mackenzie Heritage Trail south of the park boundary.

Entiako Provincial Park and Protected Area was identified as a Goal 1 (Representation) protected area to protect high value winter range for the Tweedsmuir-Entiako caribou population and for representation of Sub-Boreal Pine Spruce (SBPS) and Sub-Boreal Spruce (dry, cool) (SBSdk) ecosystems. Conservation values are rated as high and recreation, use, and appreciation values are rated as medium (Prince Rupert Region Protected Areas Team 1996). Recreation, use, and appreciation values are concentrated along the lakes and rivers and include fishing, hunting, boating, and horse riding opportunities. Currently, a mountain pine beetle outbreak has affected most of the park and protected area and is a significant regional concern. Prior to establishment of Entiako Protected Area, selective harvesting for mountain pine beetle management purposes was conducted in the protected area within 2 km of the south shore of Tetachuck Lake; harvesting activities ceased prior to the establishment of the protected area.

Several other large and moderate sized protected areas in the region including Tweedsmuir Provincial Park, Itcha-Ilgachuz Provincial Park, Francois Lake Provincial Park, Nechako Canyon Protected Area and Red Hills Uncha Mountain Provincial Park, contribute to the protection of ecological values in the area. Tweedsmuir Provincial Park, British Columbia's (BC's) largest park at approximately 1,000,000 hectares, protects significant vegetation and wildlife features as well as a variety of backcountry recreation opportunities. Itcha-Ilgachuz Park lying approximately 60 km to the south, protects high elevation summer and calving habitat for the Itcha-Ilgachuz caribou and some high elevation winter range. Red Hills Uncha Mountain Provincial Park on Francois Lake, approximately 80 km to the north, protects rare grassland, shrub-steppe and forested ecosystems on south facing slopes in the dry, cool Sub-Boreal Spruce (SBSdk) biogeoclimatic subzone. Nechako Canyon Protected Area, approximately 50 km to the northeast, protects geological and recreational features associated with the Grand Canyon of the Nechako River.

Few smaller protected areas containing campgrounds or day use areas are found in the area. Wistaria Provincial Park, approximately 80 km to the northwest, is a small day use area and boat launch on the north shore of Ootsa Lake, and Burns Lake Provincial Park, approximately 100 km to the north, provides day use and campground facilities near the town of Burns Lake. Some rustic camping and day use is also available at Francois Lake Provincial Park, approximately 80 km to the north. In the area south and east of Entiako Provincial Park, there are five forest recreation sites accessible by logging roads.

Park/Protected Area Attributes

Conservation

- Protects very high value winter habitat and the core of the winter range for the Tweedsmuir-Entiako caribou within the Greater Tweedsmuir Ecosystem; the primary objective for establishing the park and protected area was to protect the caribou winter range; the Tweedsmuir-Entiako caribou are: Blue-listed by the BC Conservation Data Centre (CDC); designated as Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC); and listed as a Species at Risk under the federal *Species at Risk Act.*
- Protects representative landscapes in the Bulkley Basin (BUB), Nechako Upland (NEU) and Nazko Upland (NAU) ecosections; includes almost one third of the 2.7% of BUB protected in BC and is the largest area of protected BUB in the province.
- Protects SBPSmc (moist cold Sub-Boreal Pine-Spruce biogeoclimatic subzone), SBSdk (dry cool Sub-Boreal Spruce) and SBSmc (moist cold Sub-Boreal Spruce); the SBSmc mostly consists of the SBSmc3 (Kluskus variant) with less contribution from the SBSmc2 (Babine variant); also includes higher elevation ESSFmv1 (Nechako variant of the moist very cold Engelmann Spruce Subalpine Fir) and ESSFmc (moist cold ESSF).
- Includes over 50% of SBPSmc protected in BC; one of only five protected areas protecting ESSFmv1 in BC (protects almost 40% of protected ESSFmv1 in the province); one of only 3 protected areas protecting SBSmc3 in BC (protects almost 50% of protected SBSmc3 in the province); includes the largest area of SBSdk in province protected areas (27% of protected SBSdk in BC); only 5.3% of the total area of the SBSdk subzone is protected in BC.
- Protects conservation values rated as high by Regional Protected Areas Team; by ecosection, conservation values are rated as very high in the Nazko Upland, high in the Bulkley Basin and medium in the Nechako Upland.
- Protects trumpeter swan winter habitat along the Entiako River just downstream from Entiako Lake.
- Protects a large tract of unroaded range for Blue-listed grizzly bears, wolverines and fisher, and for the caribou/moose/wolf/bear predator prey ecosystem.
- Protects a remote wilderness with limited or no road access and a large area of sub-boreal lowland forest in central BC that has not been disturbed by industrial activities.
- Together with Tweedsmuir Provincial Park, Kitlope Heritage Conservancy and Fiordland Recreation Area, Entiako Park and Protected Area protects representative ecosystems from interior plateau to coastal inlets within a contiguous protected area system of 1.5 million hectares.
- Plants at risk occurrences include the Blue-listed Two-coloured sedge (*Carex bicolor*) on Mount Swannell.
- Plant communities at risk occurrences in the SBSdk include Blue-listed Lodgepole pine – Juniper – Ricegrass (SBSdk/02) and Red-listed Slender wheatgrass grassland communities (not yet differentiated - either Saskatoon – Slender Wheatgrass (SBSdk/81) or Bluegrass – Slender wheatgrass (SBSdk/82)).
- Other possible occurrences of plant communities at risk include Red-listed Black cottonwood – Red-osier dogwood – Prickly rose (SBSdk/08), Blue-listed Bullrush marsh (SBPSmc/W15), and Aster-meadow rue-peavine-fireweed (SBSdk, SBSmc2, ESSF – recommended for Red-list).

- A rare native grassland ecosystem - Timber oatgrass – small flowered penstemon - occurs on the Entiako River just downstream from Entiako Lake (currently not recognized on the CDC plant communities at risk list; most sites disturbed by agriculture; recommended for listing by Haeussler 1998).
- Sensitive Kokanee and Rainbow trout spawning habitat exists on the Entiako River just downstream from Entiako Lake and on Capoose Creek just upstream from Capoose Lake.

Recreation and Tourism

- Recreation values were rated as medium by the Regional Protected Areas Team.
- Provides opportunities for backcountry hiking, camping, canoeing, wildlife viewing, horseback riding, fishing and hunting in a largely inaccessible wilderness area.
- Contains a portion of the historic Bella Coola trail that extends from Tetachuck Lake to Bella Coola, and a trail from the mouth of Aslin Creek that connects to the Bella Coola Trail near Entiako Lake.
- Contains a portion of the Entiako River canoe route that originates from Laidman Lake outside the park and protected area and ends at the mouth of the Entiako River.
- Provides an undisturbed, natural viewscape for recreational boaters on Tetachuck, Natalkuz, and Euchu lakes.

Cultural Heritage

- Cultural heritage values were rated as medium by Regional Protected Areas Team.
- There are no registered archaeological sites in the park or protected area.
- The area has been traditionally used for hunting, fishing, gathering, and collection of medicinal plants for the Ulkatchot'en (Ulkatcho) First Nation and the Cheslatta Carrier Nation.
- The shoreline of Tetachuck Lake may contain numerous First Nations sites not yet identified; Tetachuck Lake is the only lake along the Nechako Reservoir where the water level was not significantly altered – many First Nations sites along the Nechako Reservoir are now flooded.
- Contains a portion of the historic Bella Coola Trail that was used by First Nations for trade between coastal and interior areas; use of the Bella Coola Trail declined following the flooding of the Nechako Reservoir by the Kenney Dam in the mid 1950's which cut off travel between the Cheslatta and Ulkatchot'en.
- Early explorers followed aboriginal trails through the park and protected area and the Entiako River is the route of George Dawson's 1876 Canadian Geological Survey Expedition.
- Some trap lines are still used by Ulkatcho First Nation members.

Significance in the Protected Area System

- Protects the core of the winter range of the Tweedsmuir-Entiako caribou population (designated as Threatened by COSEWIC; Blue-listed by CDC).
- Protects a large tract of unroaded habitat for grizzly bears, wolverines and fisher (all Blue-listed).
- Protects trumpeter swan winter habitat.
- Protects a large area of contiguous sub-boreal lowland forest in central British Columbia that is unroaded and is undisturbed by industrial activity.

- Protects representative ecosystems within the Nechako Upland and contains the largest area of protection in the Nazko Upland ecosection in the province (contains 47% of the Nazko Upland ecosection protected in BC).
- Largest area of protection of representative ecosystems within the fragmented Bulkley Basin Ecosection of which only 2.7% is protected in 17 protected areas; includes 32% of the ecosection protected; one of only four protected areas with significant Bulkley Basin representation in BC.
- One of only three protected areas protecting SBPSmc in the province; protects more than half of the SBPSmc protected in BC.
- Includes about one quarter of the SBSdk subzone protected in BC (of which 5.3% is protected in 18 protected areas) and is the largest area of SBSdk protected in the province.
- One of only five protected areas protecting ESSFmv1 in the province; protects almost 40% of the ESSFmv1 protected in BC.
- One of only three protected areas protecting SBSmc3 in the province; protects almost 50% of the SBSmc3 protected in BC.
- Protects rare grassland and forested ecosystems in the SBSdk, and an undisturbed native grassland in the SBPSmc.
- Includes historic summer camp areas and recent trapline cabins used by First Nations.
- Protects a portion of the aboriginal Bella Coola Trail that runs from Tetachuck Lake to Bella Coola.
- Provides remote summer backcountry recreation opportunities.

Land Uses, Activities, and Interests

Access

Currently, there is limited access into Entiako Provincial Park and Protected Area. The main access into the area is from Kluskus Ootsa Forest Service Road in the Vanderhoof Forest District. The Malaput Forest Service Road branches off the Kluskus road and runs towards Johnny Lake and Van Tine Creek. A mining trail leads to Capoose Lake from Van Tine Creek but the condition of this trail is unknown. Another mining road branches off from the Malaput Road (leading to Johnny Lake) to the Wolf mineral claims. An old cat trail runs from Moose Lake to an old burn (1981) on Cow Lake. On the north side, roads lead down to Tetachuck Lake and Euchu Reach from the East Ootsa area. To access these roads, vehicles must first cross Ootsa Lake by barge. Other roads lead to lake access points near the Kenney Dam. The northern part of Entiako Provincial Park and Protected Area can be accessed by boat from any of these points on the Nechako Reservoir. Many of the larger lakes in Entiako Provincial Park and Protected Area can be accessed by floatplane in the summer and by ski plane in the winter. Three gravel airstrips are located in areas adjacent to the protected area at Redfern Rapids, Moose Lake and Laidman Lake.

Existing Tenures

BC Parks permits:

- The entire park and protected area lies within one guide-outfitter territory (601G003).
- Four angling guides hold angler days on waterbodies within the park and protected area.

- Three commercial recreation permits include guided hiking and horseback riding, and camp facilities at two sites (both sites are for one permit).
- Two recreational cabins are located on Bryan Arm in Entiako Protected Area and are used seasonally.
- Two commercial aircraft companies are permitted to provide aircraft charter services.
- The Canadian Forest Service has a research permit to monitor mountain pine beetle affected stands.

Other existing Crown permits include:

- Portions of six traplines lie within the park and protected area (TR0601T007, TR0601T008, TR0601T009, TR0601T010, TR0602T002, TR0602T003), with three cabins registered on two of those traplines; the entire park and protected area is covered by trapline tenures authorized by Park Use Permits.
- Commercial lodges/cabins are located at three sites in Entiako Provincial Park and Protected Area (Aslin Creek, Entiako Lake, Cow Lake). These facilities pre-dated park establishment, and are authorized by Crown land tenures and by Park Use Permits.
- Monitoring stations under Park Use Permit include a water gauging station on the Entiako River, a snow survey station on Mt. Swannell, and a Ministry of Forests and Range fire lookout cabin on Mt. Swannell.

Existing Land Use Activities and Facilities

- One hunting guide and four angling guides conduct guided activities in the park and protected area.
- A Ministry of Forests and Range grazing permit was granted to an agriculture trespass (hay production) in Entiako Protected Area prior to establishment of the protected area, but has since expired; a seasonal dwelling was associated with that activity. Ongoing use of that dwelling will be authorized by Park Use Permit.
- Two recreational cabins on Bryan Arm are under park use permits;
- The main recreational activities in the park and protected area include fly-in angling, hunting, hiking or horseback riding along the Bella Coola Trail, and occasionally canoeing down Fawnie Creek and the Entiako River.
- Some snowmobile use occurs, primarily in the form of access to the camp at Aslin Creek.
- Two non-tenured cabins have been identified but the state of those cabins is unknown.
- One mineral claim remains in good standing in the Capoose Claims area along the eastern boundary of Entiako Park.

Adjacent Patterns of Land Use

- There are two commercial lodges in the vicinity of Entiako Provincial Park and Protected Area: a commercial lodge on the north side of Tetachuck Lake near the Tweedsmuir Park boundary provides guided hiking and angling services; a commercial lodge on Moose Lake, just south of Entiako Provincial Park, is a base camp for the hunting guide that operates in the Entiako area.
- Two Indian Reserves (IR #1, IR #6) border the southern boundary of Entiako Provincial Park; IR #1 includes the abandoned community of Ulkatcho on Gatcho Lake; IR #14 is located near

Yellow Moose Lake on the north side of Natalkuz Lake; all 3 IRs are associated with the Ulkatcho First Nation.

- The Wolf and Capoose mineral claims were partly enclosed by Entiako Provincial Park; these two claim areas were "save and excepted" by the Vanderhoof Land and Resource Management Plan and a No Staking Reserve was placed over the area; mineral exploration activities on these existing claims (non-transferrable) can continue until the claims lapse at which time the claim areas will be converted to park; all but one of the claims have been forfeited since the park was established.

Nadina Forest District (Lakes Timber Supply Area)

- To the north, Entiako Provincial Park and Protected Area is somewhat separated from the Ministry of Forests and Range Nadina District by Tetachuck and Natalkuz lakes; the north side of Tetachuck Lake was designated as a Special Resource Management Zone (Caribou Migration Corridor Sub-Zone) in the Lakes Land and Resource Management Plan (Land Use Coordinating Office 2000).
- The Chelaslie Caribou Migration Corridor Management Strategy was developed as part of the Land and Resource Management Plan to address critical caribou migration range north of Tetachuck Lake; the area was subdivided into five subzones (A, B, C, D, E), all of which fall within the Caribou Migration Corridor Special Resource Management Zone.
- To protect important caribou spring migration, fall migration and winter habitat, operational harvesting is not permitted in the two very high use subzones B (Chief Louis and Uduk lakes) and D (north side of Tetachuck Lake); harvesting is allowed in those subzones only for forest health management; normally, access is not permitted in subzones B and D; however, if access is necessary, joint Ministry of Forests and Range and Ministry of Environment approval is required. Harvesting is permitted in subzone C, but 100% of the "natural" old and mature forest area as defined in the Biodiversity Guidebook (Forest Practices Code 1995) must be maintained.
- Road closures in most of subzones B, C and D are in effect during caribou spring migration (April 1 to May 31) and fall migration (October 1 to December 1); access to those zones is not permitted to non-tenured motorized users.
- Until recently, most forest harvesting activity had been restricted to Zones A, C and E in the Caribou Migration Corridor Sub-Zone; however, with mountain pine beetle attack in Zone D, selective forest harvesting had been conducted for mountain pine beetle management in Zone D and a temporary road was constructed to access mountain pine beetles as far west as the eastern Tweedsmuir Park boundary; this road has now been deactivated and rehabilitated; with further increases in mountain pine beetle numbers, forest harvesting for mountain pine beetle management was abandoned and the road was decommissioned.

Vanderhoof Forest District

- The Vanderhoof Forest District lies adjacent to the south and east boundary of Entiako Provincial Park. The Vanderhoof Land and Resource Management Plan defined two resource management zones that border the park (Land Use Coordination Office 1997): the Laidman Multi-value Emphasis Zone lies adjacent to the south and east, and the Davidson Resource Development Emphasis Zone lies adjacent to the northeast.
- The Davidson Resource Development Emphasis Zone contains high elevation subalpine caribou winter habitat on the east side of Tutiai Mountain in the Fawnie Mountains; however,

the only reference to maintaining caribou winter range in that zone is to restricting access and providing a buffer between resource development and critical caribou winter range further west.

- The Laidman Multi-value Emphasis Zone is zoned into 4 subzones (A, B, C, Fawnie Creek) to manage for ecological integrity, caribou habitat, grizzly habitat and backcountry recreation values along with forest harvesting and mining; subzones A and B allow for primarily clearcut harvesting while subzone C allows for primarily selective harvesting. There are no-staking reserves in subzones B and C.
- Currently, the main access into the Laidman zone is by the Kluskus Ootsa Forest Service Road; there is a road closure at 158 kilometers to prevent vehicle access into Moose Lake. The Malaput Forest Service Road leaves the main road at 144 kilometers to access Van Tine Creek and the area north and east of Johnny Lake. A sign at the beginning of this road states that snowmobile users are to avoid approaching caribou that winter in the area; however the Vanderhoof Land and Resource Management Plan recommended legislating closure of sensitive grizzly and caribou habitats (subzones B and C) to snowmobile use while allowing snowmobile/ATV use by licensed tenure holders.
- To date, most of the forest harvesting activity in the Laidman Resource Management Zone has been restricted to subzone A; forest harvesting was first conducted in the Laidman Lake and Moose Lake area in the late 1970s to the late 1980s; more recently, forest harvesting is being conducted in the Van Tine Creek area immediately south of Entiako Provincial Park and also right up to the Entiako Provincial Park boundary for mountain pine beetle management.
- A Caribou Management Strategy has been developed for the Tweedsmuir-Entiako caribou winter range within the Vanderhoof Land and Resource Management Planning area; the strategy includes the Laidman Multi-value Emphasis Zone and a portion of the Davidson Resource Development Emphasis Zone; the area is divided up into three caribou management polygons (high, medium, low) and a "No Harvest" zone in the Fawnie Mountains; for all management polygons, mature forest targets are recommended with the highest targets in the high zone, followed by the medium and low zones; special provisions to minimize disturbance in high value caribou habitats are also included; access management includes a recommended closure of the high (including the proposed "No Harvest" zone) and medium polygons to non-tenured motorized users and general snowmobile use from December 1 to May 1.
- Plateau Forest Products, Slocan Group, operates along the southern boundary of the Entiako; there are many proposed and approved cutting blocks along the southern boundary of the protected area.
- Environmental Stewardship Division (Ministry of Environment) recently established Ungulate Winter Range (UWR) polygons for areas adjacent to the park and protected area, with general wildlife measures for caribou in the UWRs. The UWRs and general wildlife measures have include areas of no or restricted harvest and road building restrictions.

First Nations Interests

- The northern portion of Entiako Protected Area lies within the asserted territory of the Cheslatta Carrier Nation and all of Entiako Provincial Park and Protected Area lies within the traditional use area of the Ulkatchot'en (Ulkatcho) First Nation; Ulkatcho Reserve #1 is on the southern boundary of Entiako Provincial Park.

- The Entiako area has been used by the Ulkatchot'en First Nation and the Cheslatta Carrier Nation for hunting, fishing, trapping, and harvesting berries and plants for food and medicinal purposes.
- Ulkatcho concerns include:
  - addressing the mountain pine beetle impacts as a top priority;
  - the potential for a large wildfire in the mountain pine beetle killed area;
  - maintaining access routes and trails in and through the park and protected area;
  - maintaining access to IR #1, IR #6 and IR #14, which are located near the park and protected area; and,
  - lack of existing information on Ulkatcho use of the Entiako area since a Traditional Use Study has not been completed; the Ulkatcho would like to see a Traditional Use Study completed but currently do not have the capacity or funding.
- One of the Ulkatcho elders has a trapline in the Entiako area and his cabin/homestead is located in the park; this site was not surveyed for IR status because it was located north of the area being surveyed for IRs at the time (L. Price, pers. comm.).

Other Agency Interests

- BC Ministry of Forests and Range has concerns about mountain pine beetle and fire management in the park and protected area.
- Ministry of Environment, Ecosystems Branch has an interest in management of species at risk, specifically caribou.
- Environment Canada has an interest in management of species at risk, specifically caribou.
- Ministry of Tourism, Sport and the Arts manages commercial recreation tenures on lands outside of protected areas.
- The Canadian Forest Service has established permanent sample plots to monitor mountain pine beetle affected stands.

Private and Public Stakeholder Interests

- Commercial users: four angling guides, one guide-outfitter, six trappers, three recreation guides (guided hiking and horseback riding), two commercial aircraft charter companies operate in the park and protected area.
- Non-commercial users in the areas include: hikers, horseback riders (Burns Lake Team Penners), canoeists, anglers, and hunters.
- Forest industry licensees operate on the adjacent lands.
- One mineral claim holder operates in the area near the park and protected area.
- Community groups (Northside Lakes Protection Society, Colleymount Recreation Commission, Southside Economic Development Group, Tweedsmuir Recreation Commission).

Role of Entiako Provincial Park and Protected Area

The primary role of Entiako Provincial Park and Protected Area is to protect the core of the Tweedsmuir-Entiako caribou winter range and the caribou population itself. The park and protected area also protects a large contiguous area of unroaded lowland sub-boreal forest in central British Columbia, which provides habitat for a variety of wildlife species at risk including

woodland caribou, grizzly bear, wolverine and fisher, as well as for the caribou/moose/wolf/bear predator/prey system.

The park and protected area protect significant areas of ecosystems that are poorly represented at the provincial level, including the SBSdk, ESSFmv1 and SBSmc3 biogeoclimatic subzones/variants and the Bulkley Basin Ecosection. It is also valuable for conserving rare plant communities such as the Lodgepole pine – Juniper – Ricegrass forested community and Slender wheatgrass grassland communities in the SBSdk, and a rare native grassland ecosystem (Timber oatgrass – small flowered penstemon) in the SBPSmc.

Together with Tweedsmuir Provincial Park, Kitlope Heritage Conservancy and Fiordland Recreation Area, Entiako Provincial Park and Protected Area is part of a system of contiguous protected areas of 1.5 million hectares that protects representative ecosystems from interior plateau to coastal inlets in central British Columbia. The park and protected area is also of special value for traditional First Nations uses and contains significant First Nations cultural features including a portion of the Bella Coola Trail, which was used as a trading trail between coastal and interior people.

A secondary role is to provide primarily summer recreation opportunities in a remote lowland forest setting and on the culturally and historically significant Bella Coola Trail. Activities include hiking, horseback riding, hunting, angling and canoeing.

Ecosystem Management Considerations

Ecosystem management in Entiako Provincial Park and Protected Area requires consideration of significant ecosystem components and processes, and interactions between them. The impact of each ecosystem process on various ecosystem components will vary with the scale, intensity and frequency of occurrence. Some ecosystem components may benefit from certain ecosystem processes while others may be negatively impacted.

In the Entiako ecosystem, fire and mountain pine beetles are the major large-scale disturbance factors affecting the vegetation mosaic. Other ecosystem components are also affected either directly or indirectly through changes to vegetation structure and habitat.

The following sections highlight important considerations for managing ecosystem components and processes, within the context of a dynamic ecosystem.

Caribou management considerations

The Tweedsmuir-Entiako caribou population is one of 13 populations that are found in the Southern Mountains National Ecological Area. In 2000, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) designated all caribou in the Southern Mountains National Ecological Area as Threatened; however, the risk of extirpation for individual populations varies. Based on COSEWIC criteria used to assess the risk of individual populations becoming extirpated, the Tweedsmuir-Entiako caribou population itself is classified as Threatened. Both Entiako Provincial Park and Entiako Protected Area were designated to protect

the Tweedsmuir-Entiako caribou winter range with the Tweedsmuir-Entiako caribou population and winter range as the management priority.

The relationship between caribou and their winter range in the Entiako has been examined over the last 20 years based on studies of radio-collared animals. Management considerations for caribou are based on both population requirements and winter range requirements. Management considerations for lichens are discussed separately.

- Entiako Provincial Park and Protected Area protects important winter range for the Tweedsmuir-Entiako caribou population
- During winter, caribou feed primarily on terrestrial lichens, and to a lesser extent on arboreal lichens.
- During winter, caribou select mature pine forests on dry (Dry Lichen) and slightly dry (Lichen Moss) sites.
- Winter habitat requirements for the Tweedsmuir-Entiako caribou include:
  - access to an adequate supply of terrestrial and arboreal lichens;
  - snow interception by the forest canopy to allow movement within the winter range; and,
  - large tracts of winter range where caribou can exist at low densities as an anti-predator strategy, and can continue rotating their wintering areas.
- The most critical feature of woodland caribou range is space; adequate space is required by caribou for predator avoidance and for access to a wide range of sufficiently abundant habitats (required for response to a variety of winter snow conditions).
- Other historically used winter ranges have been abandoned; possible causes include the flooding of the Nechako Reservoir, forest harvesting, access, altered predator-prey relationships, and reduced winter range requirements due to a reduced population size.
- Forest harvesting is continuing in the remainder of the Entiako caribou winter range, and is currently focused on mountain pine beetle management and salvage.
- The average adult mortality rate exceeded the average calf recruitment rate from 1985 to 2002, suggesting that the population is declining.
- Wolf and bear predation are the major limiting factors for caribou in the Tweedsmuir-Entiako area.
- Moose colonized central B.C. in the early 1900s, resulting in changes to predator - prey relationships and increased impacts of predation on shrinking caribou populations.
- The response of caribou winter habitat use to epidemic mountain pine beetle attack is unknown; no literature exists, as there has been no opportunity to study impacts of mountain pine beetles on caribou and caribou habitat; continued use of the area will depend on:
  - the degree of mountain pine beetle attack within the winter range;
  - the degree of mountain pine beetle attack within stands;
  - the response of lichens to changes in stand structure from mountain pine beetle attack;
  - the ability of caribou to travel through heavily attacked areas (snow interception, blowdown);
  - winter range requirements; and,
  - other environmental factors (e.g. climate change).
- The response of caribou travel patterns to changes in stand attributes due to mountain pine beetles (e.g. snow interception, blowdown) is unknown.

- Caribou winter range components other than pine lichen forests (e.g. subalpine forests for arboreal lichen use) may become more important if caribou undergo major shifts in habitat use in response to the mountain pine beetle epidemic; it is important to maintain all areas of historic range should a shift in habitat use occur.

Other wildlife management considerations

Information on wildlife species other than caribou in the Entiako area is limited. However, because caribou require large areas of relatively undisturbed habitat, caribou management strategies will also benefit other species that have similar requirements. Some rare or sensitive species may require additional specific management.

- Moose use Entiako Provincial Park and Protected Area during summer and winter; during winter they feed primarily by browsing on shrubs; habitat changes that favour moose habitat (increased shrubs, increased forest edge) could lead to increased moose numbers, increased predator numbers, and resulting increased predation on caribou.
- Trumpeter swans winter on the Entiako River downstream from Entiako Lake and require ice-free stretches on creeks and rivers for winter foraging.
- Wolves, grizzly bears and black bears are the main large mammal predators in the Entiako ecosystem.
- Grizzly bears, wolverines and fisher are blue-listed species that occur in the Entiako area; these species occupy large home ranges and require large areas of wilderness habitat.

Fish management considerations

Fish species present in Entiako Provincial Park and Protected Area are typical of species present in the area. The populations appear healthy and relatively robust to angling pressure and habitat damage.

- Kokanee spawning habitat is the most sensitive fish feature in the Entiako area.
- Known important kokanee spawning areas include Entiako River, up to 2.0 km downstream of Entiako Lake, and Capoose Creek, immediately upstream of Capoose Lake.
- Potential kokanee streams include any inlets or outlets within 1 km of known kokanee bearing lakes.
- Intense crown fires burning to the stream banks have the potential to heavily impact kokanee spawning habitat; if all the spawning areas for a lake's population of kokanee are heavily impacted for three to four consecutive years, the implications for the population could be severe.
- Larger main stem systems in the area (Fawnie Creek, Van Tine Creek, Capoose Creek, and the Entiako River) are large and energetic systems containing habitat that would be vulnerable to large, intense fires burning to the stream bank; the resulting habitat damage would decrease the population densities of river resident rainbow trout and mountain whitefish; lake resident populations using these systems to spawn would also be impacted; while there is little to no concern for the long-term persistence of these species in these systems, severe habitat damage could require up to 50 years to recover.

Aquatic ecosystem function is closely linked to terrestrial ecosystem function. Large-scale disturbances (such as fire and mountain pine beetles) may result indirectly in changes to the

aquatic environment. Differences in local topography, organic and inorganic soil characteristics, hydrologic regimes, and riparian vegetation affect how forest fires will impact aquatic habitats.

Little information is available on the impacts of mountain pine beetle outbreaks on fish and fish habitat, while some information is available on potential impacts of fire. Impacts of fire on fish habitat depend on the size, intensity and location of the fire. Surface fires would likely have only limited, short-term impacts on water quality, if any. More intense fires that spare the riparian vegetation may impact hydrology, and nutrients and sediments to a limited extent, but leave large woody debris processes intact. Intense fires that burn to the bank are of most concern for fish habitat.

Predicted impacts of forest fires on fish habitat in streams in the Entiako include positive and negative effects:

- increased flow during summer months may lead to more summer rearing habitat in streams;
- increased nutrient supplies to streams increases primary productivity and food available for fish;
- increased fine sediment deposits in spawning gravels can reduce interstitial flow, reducing the survival of fish eggs and alevins in the redds;
- increased coarse sediment movement and bank erosion will increase the likelihood of channel dewatering during low flows and redd scour during high flows; these both lead to the destruction of the redd;
- increased likelihood of mass wasting events will result in deposits of large amounts of sediment to the stream and severe impacts on channel characteristics; this would likely occur only in the steeper terrain of the Fawnie Mountains;
- guides report that summer water temperatures in many streams in the Entiako already reach levels too high for salmonids; fires removing streamside vegetation may increase the length of time that a stream is overly warm;
- loss of long-term large woody debris inputs will lead to less cover for rearing, less habitat complexity, and fewer hydraulic refugia for rearing fish;
- increased coarse sediment load will decrease pool habitat used by larger fish for rearing and may lead to channel dewatering which renders the stream uninhabitable by fish.

The recovery period for aquatic ecosystems after forest fire depends on the factor of interest. Changes in hydrology and nutrient exports return to pre-burn levels with the establishment of healthy shrub growth, within 3-7 years. Temperature effects last until forest cover provides shade to the stream at pre-burn levels. The impacts of coarse sediment inputs will move downstream and last until the substrates are moved out of the system, usually in tens of years. The loss of large woody debris inputs to streams can take up to 50 years to recover.

The impacts of fire on lakes and wetlands are less understood and appear to be issues of water quality imported by stream inlets. However, the effects of increased nutrient and suspended sediment levels appear to be relatively short-lived, not lasting more than a year. Increased nutrient levels in lakes may lead to an increased likelihood of winterkill in lakes already pre-disposed to this condition (shallow and/or high productivity), which includes a number of lakes in the southwest part of Entiako Provincial Park and Protected Area.

Vegetation management considerations

Vegetation management must consider the current vegetation landscape, rare and sensitive vegetation and plant communities, and changes to vegetation following the current mountain pine beetle outbreak and potential forest fires.

- Currently, forests in Entiako Provincial Park and Protected Area are dominated by mature lodgepole pine stands.
- Lodgepole pine produces two types of cones: serotinous cones, which remain closed until exposed to intense heat, such as fire, at which time they open and release abundant seed; and, non-serotinous which produce seed that is released every year.
- Serotinous cones are stored on the tree and remain viable for decades.
- The proportion of serotinous cones on a tree is genetically determined and varies geographically; lodgepole pine populations in interior B.C. have considerably higher numbers of serotinous cones than more coastal populations, presumably in relation to the selection effects of frequent forest fire in interior BC.
- Lodgepole pine seeds germinate on mineral soil exposed by disturbances.
- Large-scale fire events provide ideal conditions for lodgepole pine establishment through opening of serotinous cones, and exposure of mineral soil for germination; as a result, stands may regenerate at extremely high densities (over 20 000 stems/ha on moss (medium moisture) and lichen moss (slightly dry) sites).
- Non-serotinous cones disseminate a small seed crop annually that takes advantage of local disturbances.
- Mountain pine beetle disturbance is not expected to result in high densities of regenerating lodgepole pine seedlings as occurs with fire, since serotinous cones will not be opened and less mineral soil will be disturbed; seedling establishment will depend mostly on seeds from non-serotinous cones.
- Very high densities of lodgepole pine following fire may affect terrestrial lichen regeneration by creating a surface microclimate, which retains higher moisture levels than in less dense stands.
- Ecosystems in Entiako Provincial Park and Protected Area are predominantly mesic (medium soil moisture conditions) and submesic (slightly less than medium soil moisture conditions) with lesser amounts of xeric (dry) sites and forested and nonforested wetlands.
- Whitebark pine trees likely occur at higher elevations over 1200 metres in the Fawnie Mountains; whitebark pine is currently imperilled in BC due to white pine blister rust attack and is also attacked by mountain pine beetles.
- Four rare plant communities are known or likely to occur in the park and protected area; all communities have evolved with large-scale natural disturbance conditions; although individual plants may be affected by natural disturbances, the plant communities will continue to exist in a dynamic state.
- A unique Timber oatgrass - small flowered penstemon (*Danthonia intermedia-Penstemon proceras*) native grassland community occurs along the Entiako River; most of these sites elsewhere in the province have been disturbed by agriculture and introduced species; diversity in this unique native grassland is highly susceptible to human activities including camping.
- There is no information on invasive plants in the park and protected area.

Lichen management considerations

Terrestrial lichens, and to a lesser extent arboreal lichens, are the principal winter food source for the Tweedsmuir-Entiako caribou population. Although caribou are not currently limited by winter forage quantity, abundant quantities of lichens are required for the long-term maintenance of caribou populations.

- Terrestrial lichen abundance is highly dependent on site conditions and on competition with mosses and vascular plants.
- On all but the driest sites within Entiako Provincial Park and Protected Area, processes that reduce surface moisture (fire, possibly mountain pine beetles) favour the establishment and growth of terrestrial lichens.
- Small-scale processes that produce gaps in the canopy also favour the establishment and growth of terrestrial lichens.
- If absence of disturbance is prolonged, terrestrial lichen abundance will decline due to competition from kinnikinnick on drier sites, and more importantly, from feathermosses on moister sites.
- Terrestrial lichens are highly susceptible to physical damage (e.g. fire) especially during the driest months.
- Caribou prefer terrestrial lichens from the genera *Cladina, Stereocaulon,* and *Cladonia*; these species take approximately 30 - 80 years to recover on lichen moss (submesic) sites after stand replacing fires.
- There is no information on the effects of surface fire on terrestrial lichens; however, this type of disturbance is probably an important process in the maintenance of lichen-dominated ecosystems; recovery after surface fire should be shorter (< 20 years) than for stand replacing fire.
- Terrestrial lichens grow slowly; estimates of growth rates for various species of *Cladina* obtained from studies in the Northwest Territories ranged between 3.4 - 6.0 mm/year.
- Dispersal can be problematic after large-scale disturbances; many terrestrial forage lichens disperse by fragmentation and require a vector such as a fur-bearing animal; caribou are believed to be one of the main vectors (Goward 2000).
- Research suggests that a mosaic of stands ages (presumably maintained by fire) will provide a landscape that supports continuous lichen productivity.
- There is presently little information on the effects of mountain pine beetle on terrestrial or arboreal lichen abundance; preliminary results from research currently being conducted on the effects of mountain pine beetles on terrestrial lichens suggests that the abundance of terrestrial caribou forage lichens have initially decreased with a corresponding increase in kinnikinnick and other herbaceous plants (Williston and Cichowski 2004, 2006).

Fire management considerations

Fire and insects are the two ecosystem processes that interact at a landscape scale in Entiako Provincial Park and Protected Area. Fire regime (frequency, intensity, fire size) is dependent on fire climatology and its interactions with fuel (vegetation) types and topography. Fuel types, in turn, are dynamically influenced by the fire and insect interactions that create the forest stand structures that any particular fire encounters.

- The fire regime that has characterized the present forest structure in Entiako Provincial Park and Protected Area and that will continue to dominate the future landscape, is frequent stand-replacement crown fires.
- The dry cool subzone of the Sub-Boreal Spruce (SBSdk) and the moist cold subzone of the Sub-Boreal Pine-Spruce (SBPSmc) biogeoclimatic zones are classified as Natural Disturbance Type (NDT) 3: ecosystems with frequent stand initiating events (Forest Practices Code 1995); on average, fires are moderate to large and occur and burn a given area every 125 - 175 years in the SBPSmc and every 100 - 150 years in the SBSdk.
- Based on forest cover information, the fire cycle for the predominant moist cold subzone of the Sub-Boreal Pine-Spruce biogeoclimatic zone (SBPSmc) portion of Entiako Provincial Park and Protected Area was calculated at 145 years or an annual disturbance rate of 0.7%; between 1901-1960 (before active fire suppression); average patch size (a surrogate for stand-replacement fire size) ranged between 25 and 78 hectares with maximum patch sizes ranging from 382 to 5,404 hectares.
- Low intensity surface fires occur frequently and contribute to the maintenance of open forest stands.
- Entiako Provincial Park and Protected Area is mainly rolling plateau covered with continuous crown fire-prone fuels, predominantly lodgepole pine; these stands are best represented as the mature lodgepole pine (C-3) Fire Behaviour Prediction System fuel type.
- High and extreme mountain pine beetle hazard stands make up 50% of the area; most of those stands have already been killed by mountain pine beetles during the current outbreak; fire behaviour within these beetle killed stands will depend on the phase of attack (e.g. red vs grey, etc.) and the fuel type will vary and in some cases will not be represented within the present system; at some phases, the mountain pine beetle killed stands will be represented by a more crown fire-prone fuel type with a faster equilibrium spread rate.
- Effective fire suppression and moderate fire climate over the past 30 years has kept the amount of recently burned area in Entiako Provincial Park and Protected Area low and has resulted in a landscape of primarily older forests and increasing fuel accumulation in individual stands.
- The next 50 years should see more periods of crown fire weather that would result in increased area burned regardless of fire management effort.
- An increasing fire activity trend is ensured by the current change in fuel type as a result of the mountain pine beetle epidemic.
- The current mountain pine beetle outbreak will slightly increase fuel hazard ratings until dead needles fall from trees.
- Blow down in the next 10-15 years from the current mountain pine beetle outbreak will result in increased potential fire intensity.
- Fire climatology suggests that crown fire weather conditions only occur potentially for a few days each year with peaks in June and August.
- The observed open pine-lichen sites generally have not experienced fires of scarring intensity in the past 30 years, allowing substantial recovery of lichen productivity; increased fire activity over the next 30 years, coupled with increased surface fuel load as mountain pine beetle-killed trees fall, will place productive lichen area at increased risk.

Forest insect management considerations

Forest insects and fire are the two main large-scale disturbance processes in Entiako Provincial Park and Protected Area. Mountain pine beetles were first recorded in the Entiako area in the mid 1980s but were reduced by severe winter weather from 1988 to 1990. The recent mountain pine beetle outbreak has resulted in extensive lodgepole pine mortality throughout the park and protected area.

- Mountain pine beetles are a significant large-scale natural disturbance agent in the Entiako area and attack primarily mature lodgepole pine trees.
- Mountain pine beetles favour larger trees where probability of brood survival is higher.
- Fire suppression during the last 50 years has resulted in a landscape of primarily older lodgepole pine in Entiako Provincial Park and Protected Area.
- High and extreme mountain pine beetle hazard stands make up over 50% of the park and protected area.
- Currently, most of the mountain pine beetle attacked stands in the park and protected area are in the grey phase of the attack now that most of the needles have fallen from attacked trees.
- Extreme cold winter weather is likely the only factor that will adversely affect the current mountain pine beetle population level; however, now that most of the Entiako area has been affected by mountain pine beetles, beetle numbers in the area are declining due to reduction of its food supply (suitable host trees).
- Now that the current mountain pine beetle outbreak has diminished, mountain pine beetle hazard in remaining stands will decrease.
- Younger, currently moderate hazard stands make up 25% of the landscape and will likely become susceptible in 30-50 years; some of these stands have also been affected by the current outbreak.
- Pine stands with larger diameter trees will experience higher tree mortality rates due to mountain pine beetles than small diameter stands; epidemic levels of mountain pine beetles will likely only thin small diameter pine stands.
- Snags in mountain pine beetle killed stands will eventually blow over, possibly affecting animal movement.
- Endemic levels of mountain pine beetles kill individual or small patches of trees, creating gaps in the forest canopy; gaps provide conditions that favour terrestrial lichen growth.
- Mountain pine beetles also attack whitebark pine.

Forest disease management considerations

Forest diseases tend to create small-scale disturbances in the Entiako area. These disturbances create gaps in the canopy, creating conditions that may favour terrestrial lichen growth.

- Diseases commonly found in BC affect juvenile and mature trees.
- The most significant forest disease agent in the Entiako area is likely white pine blister rust, which affects whitebark pine trees that likely occur in the Fawnie Mountains.
- Fire could reduce the number and intensity of forest disease species.
- Root diseases can still be viable after fire, but further research on the interaction of fire and disease is needed.
- Heart rots are likely common in mature pine trees in the Entiako area.

- Rust stem diseases (i.e. western gall rust) will be a natural thinning agent in post crown-fire, high density, juvenile pine stands.
- Within the next two decades, snags in mountain pine beetle killed stands will be more prone to blowdown as saprophytic fungi increase in intensity.
- Spruce broom rust incidence could be reduced if surface fires reduce the levels of its alternate host, kinnikinnick.

Climate change

Climate change will affect ecosystem processes and possibly ecosystem structure, especially over the long term.

- Climate change models suggest:
  - an increase in average annual temperature;
  - a modest increase in summer temperature;
  - little change in precipitation pattern; and,
  - a slightly longer summer season extended in both spring and fall.
- Potential fire and forest insect disturbance will likely increase in the Entiako area as a result of predicted climate change.
- The Entiako forest mosaic may change as a result of the effects of climate change on natural disturbance processes; increased disturbance will result in increased area of younger stands.

Mountain pine beetle/fire effects

Table 1 summarizes potential effects of mountain pine beetles and fire on ecosystem components and processes under various mountain pine beetle and fire conditions.

Ecosystem Management Areas

Five Ecosystem Management Areas (EMAs) have been delineated for Entiako Provincial Park and Protected area (Cichowski *et al.* 2001; referred to as Ecosystem Management Zones) based on:

- caribou winter range;
- vegetation and fish values;
- biogeoclimatic subzones;
- rare and sensitive species and ecosystems;
- fire patterns and potential; and,
- mountain pine beetle hazard and distribution.

EMA boundaries were also drawn to follow landscape features as much as possible (Figure 3).

Each Ecosystem Management Area represents a distinctive part of the caribou winter range and contains a unique combination of natural features (Table 2). Appendix A contains a descriptive summary of characteristics of each Ecosystem Management Area.

Figure 3

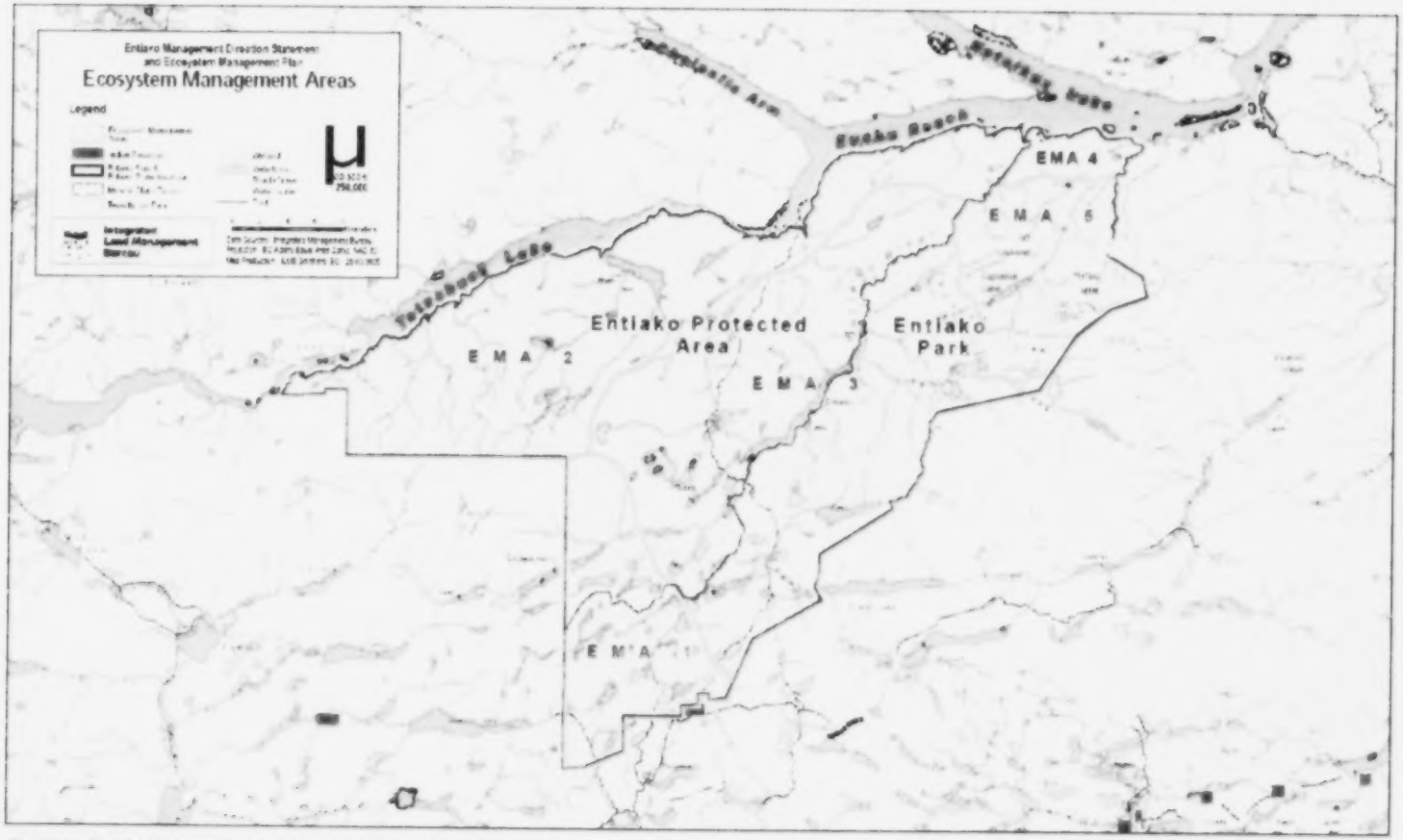

Figure 3. Entiako Park and Protected Area Ecosystem Management Areas

Table 1 Effects of fire and mountain pine beetles on ecosystem components and processes in Entiako Provincial Park and Protected Area.

Ecosystem component/process	Surface fire	Crown fire	Epidemic mountain pine beetles	Endemic mountain pine beetle
Forest canopy	• no impact	• removal (patchy)[1]	• remove most of the larger lodgepole pine trees	• remove some large lodgepole pine trees (gaps)
Understorey vegetation	• removal (patchy)	• removal (patchy) • release of understorey trees, shrubs and herbs • increased seeding in of pine and spruce • possible dense pine regeneration	• release of understorey trees, shrubs, and herbs • increased seeding in of pine and spruce • pine regeneration less than for crown fire	• local release of subcanopy trees
Caribou winter range - terrestrial lichens	• removal (patchy) • site dependent	• removal (patchy) • approximately 30-80 years to recover	• variable (depends on response of lichens to canopy removal, site type, etc.)	• variable (depends on response of lichens and competing vegetration to canopy removal, site type, etc.)
Caribou winter range – arboreal lichens	• no impact	• removes substrates and source populations for recolonization	• may result in temporary increase (arboreal lichens inhabit dead limbs) • dramatic decline with blowdown	• slight increase in habitat characteristics (more dead limbs and better ventilation)
Caribou winter range – movement (snow interception)	• no impact	• reduced snow interception • blowdown possible barrier to movement	• reduced snow interception • blowdown possible barrier to movement	• no impact
Caribou winter range – space	• no impact	• reduced space	• possible reduced space	• no impact
Crown fire	• reduces vertical and horizontal fuel continuity, reducing probability of crown fire	• reduces crown fire probability for 40-80 years	• short term: slight increase in fire hazard during the red attack phase then decreasing during the grey attack phase • long term: blowdown increases potential fire intensity	• slight increase in larger surface fuel
Surface fire	• reduces surface fire probability for 1-5 years	• reduces surface fire probability for 1-5 years	• short term: slight increase in fire hazard during the red attack phase then decreasing during the grey attack phase • long term: blowdown increases potential fire intensity	• slight increase in larger surface fuel

Table 1 (continued). Effects of fire and mountain pine beetles on ecosystem components and processes in Entiako Provincial Park and Protected Area.

Ecosystem component/process	Surface fire	Crown fire	Epidemic mountain pine beetles	Endemic mountain pine beetles
Mountain pine beetles	• maintains open canopy • reduces hazard through stand thinning • increases tree stress and mountain pine beetle productivity	• removes host • eliminates mountain pine beetle risk/hazard for 40-60 years	• removes host • eliminates mountain pine beetle risk/hazard for 20-40 years as younger unaffected trees mature	• maintains beetles in or near susceptible stands
Shallow lakes	• no impact	• increased nutrient loading • increased trophic state • increased frequency of winterkill	• minimal or no impacts	• no impact
Kokanee spawning habitat	• no impact	• increased interstitial sediments and gravel scour if fire burns to stream banks	• minimal to moderate impacts as per crown fire if large amount of watershed is impacted.	• no impact
Timber oatgrass/ native grassland	• unknown • grasses assumed to be fire adapted • herbs removed but likely to seed in quickly • may be important for nutrient cycling	• not applicable	• not applicable	• not applicable
Rare grasslands (SBSdk/81, SBSdk/82)	• reduce encroachment of shrubs and trees • grasslands dependant on frequent fires • may be important for nutrient cycling	• not applicable	• not applicable	• not applicable
Forest Diseases	• may reduce intensity of diseases that require a live host • may increase the intensity of saprophytic fungi.	• may reduce intensity of diseases that require a live host • may increase the intensity of saprophytic fungi.	• may reduce intensity of diseases that require a live host • may increase the intensity of saprophytic fungi.	• no impact

[1] Removal (patchy) indicates that removal ranges from total removal to patchy removal; for understorey vegetation and terrestrial lichens, drier sties burn more continuously than wetter sites.

Table 2. Characteristics of Ecosystem Management Areas (EMA) in Entiako Provincial Park and Protected Area.					
	EMA 1	**EMA 2**	**EMA 3**	**EMA 4**	**EMA 5**
Caribou winter range					
Caribou winter habitat value	moderate-low	High	high	moderate-high	moderate-high
Caribou feeding strategy	terrestrial/arboreal	terrestrial/arboreal	terrestrial/arboreal	terrestrial/arboreal	subalpine-arboreal alpine-terrestrial
Other	slightly higher snow depths	early and late winter caribou concentrations	core of the caribou winter range; movement corridors	late winter use	mid-late winter use
Other wildlife					
Trumpeter swan			known wintering		
Sandhill crane (*blue listed*)	possible nesting		possible nesting		
American white pelican (*red listed*)	possible feeding		possible feeding		
Elk, deer		potential use			
Fish					
Aquatic habitat	shallow lakes		kokanee feeding and spawning habitat		kokanee feeding and spawning habitat
Vegetation					
Dominant biogeoclimatic subzones	SBPSmc	SBSdk	SBPSmc	SBSdk SBSmc	ESSFmv SBSmc
Dominant forest age (years)	60-250	60-250	60-250	60-250	>140
Dominant forest structure	pole and young pine	mix of pole, young and mature pine	young and mature pine	mix of pole, young and mature pine	mature and young pine
Whitebark pine					likely present
Two-coloured sedge (*blue listed*)					present
Lodgepole pine - Juniper – Ricegrass (SBSdk/02) (*blue listed*)		present		present	
South facing grassy slopes (SBSdk/81 and SBSdk/82) (*red listed*)		present			
Black cottonwood – Red osier dogwood – Prickly rose (SBSdk/08) (*red listed*)		possible			possible
Bulrush marsh (SBPSmc/W15) (*blue listed*)	possible	possible	possible		
Timber oatgrass – small flowered penstemon native grassland			present		

Table 2 (cont.). Characteristics of Ecosystem Management Areas (EMA) in Entiako Provincial Park and Protected Area.					
	EMA 1	**EMA 2**	**EMA 3**	**EMA 4**	**EMA 5**
Physical landscape					
Landscape features	flat	flat; McGibbon Hill	flat	flat	Fawnie Mountains
Fire					
Peak of fire behaviour potential	June August	June August	June August	June August	May August
Average mean fire return interval (years)	SBPS: 125-175	SBS: 100-150 SBPS: 125-175	SBPS: 125-175	SBS: 100-150	ESSF: 200-300 SBS: 100-150
Average fire size (hectares)	50-500	50-500	50-500	50-500	ESSF: 50-150 SBS: 50-500
Fire suppression effects on landscape	high	high	high	high	low-moderate
Mountain pine beetles					
Attack phase 2006	grey	grey	grey	grey	grey
Structures					
Cabins/camps	Entiako River - 1	Bryan Arm – 2 Aslin Creek – 2 Grazing lease – 1	Fawnie Creek – 1 Entiako River – 1 Cow Lake – 1 Entiako Lake – 2	0	Capoose Lake – 1 Mt. Swannell - 1
Measuring stations					Entiako River – 1 Mt. Swannell - 1

Management Commitments and Issues

Direction from Previous Planning

In 1997, the Vanderhoof LRMP recommended the Entiako area for protection with emphasis on caribou conservation and on backcountry wilderness recreation. This area was designated as Entiako Provincial Park in 1999. In 2000, the Lakes LRMP recommended the adjacent portion of the Entiako area north of the Entiako River and south of the Nechako Reservoir for protection for caribou winter range and ecosection protection, for "the long-term ecological viability of the area for caribou, while maintaining an acceptable level of mountain pine beetle infestation risk to adjacent timber resource values, with the priority on preservation of caribou habitat". This area was designated as Entiako Protected Area in 2001.

The Vanderhoof LRMP provides explicit objectives and strategies for Entiako Provincial Park, including the following (see Appendix B for full text):

- maintain natural wild fish stocks; establish maximum use levels for quality lakes;
- inventory and designate cultural and heritage values and mitigate impacts on archaeological sites;
- provide opportunities for backcountry recreation (angling, guiding and tourism) for the Ulkatchot'en and tourism operators, while minimizing impacts on other natural resource values; minimal permanent facility development, except for the rustic-style facilities at existing sites; maintain low densities of recreational use and the high quality wilderness experience in a relatively undisturbed natural environment; maintain traditional levels of consumptive uses (e.g. trapping, hunting, firewood) within population constraints;
- periodically inventory wildlife populations and consider developing a predator/prey management plan as monitoring research supplies more information;
- maintain caribou habitat and population requirements in the short term by protecting high quality caribou habitat from disturbance, and in the long term by developing a winter habitat regeneration strategy to provide caribou habitat over the long term (controlled burning, fire management plan);
- develop fire management and forest health plans in consultation with Vanderhoof and Nadina Forest Districts, BC Environment, and a caribou biologist;
- consider controlled burns for habitat enhancement, biodiversity and pest management;
- consider initial attack for high priority values and assess wildfires for risks;
- no cultivated agriculture will be considered; the limited amount of grazing associated with recreational uses (hunting, trail-riding etc.) is generally acceptable;
- include mineral claims in the Wolf and Capoose mineral claim areas in Entiako Provincial Park as soon as they lapse; revise the northwestern boundary of the Wolf claim area to reduce the proximity to the Entiako River valley; block access roads physically and with signed legislative restriction outside of exploration periods; no additional road development to the west of existing trails;
- no road access unless required for fire control, with full consideration for other resource values; full reclamation and access closure will be required;

- no hydro or road development (including hydro lines) should cross through Entiako Provincial Park;
- no motorized vehicle use except by licensed tenure holders (e.g. trappers, guides).

The Lakes LRMP provides the following management direction for Entiako Protected Area:

- preservation of caribou habitat remains the resource management priority, and acceptable strategies for pursuit of mountain pine beetle objectives in this management unit may include pheromone baiting, large scale controlled burning, small scale controlled patch burns and single tree disposal;
- the Entiako is a protected area established under the *Environment and Land Use Act*, and is intended for designation as Class A Park once an ecosystem - based management plan has been completed which meets the dual objective of caribou habitat and mountain pine beetle management.

Other general direction for protected areas in the Lakes LRMP area include the following (excerpted below; full text in Appendix B):

- develop a park management plan; a Management Direction Statement will be used to direct park management and operations pending a comprehensive park management plan;
- discontinue existing mineral and timber tenures and other tenures/encumbrances;
- generally direct physical commercial infrastructure (e.g., roads, lodgings, staging areas, etc.) outside of park boundaries;
- permit existing tenures within new parks for utility right-of-ways, communication sites, grazing, commercial backcountry recreation, guide-outfitting, trapping, water works and uses, and other tenures not based in commodity extraction in accordance with existing management conditions;
- manage natural occurrences (e.g., fires, insects, and forest disease) within park boundaries to respect resource values both within and adjacent to park areas;
- develop mountain pine beetle management strategies for each park;
- maintain ecosystem representation and integrity, and ensure protection of key resource values and natural features; emphasize park management on maintaining ecosystems, resource values and natural features for which protected areas were established;
- ensure connectivity of wildlife habitat between parks and surrounding areas;
- protect rare, endangered and species at risk and their habitats and investigate opportunities to establish benchmarks for scientific study and management;
- provide primarily primitive and backcountry recreation opportunities; monitor levels of recreational use and associated impacts and apply management, where necessary, to maintain backcountry qualities;
- consult with local First Nations to identify traditional use areas within parks; pursue options to work cooperatively with First Nations in planning and management of parks;
- consider non-aboriginal history in park management plans.

In addition, an interim mountain pine beetle management strategy was developed for proposed protected areas in the Lakes LRMP area prior to their designation. This strategy no longer applies since Entiako Protected Area was designated in 2001.

Direction from Future Planning

In 1996, British Columbia signed the National Accord for the Protection of Species at Risk. This Accord provided the framework for the federal *Species at Risk Act* (SARA) and recognized the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as a source of independent advice on the status of species at risk nationally. In May 2000, COSEWIC designated Woodland Caribou within the Southern Mountains National Ecological Area (SMNEA), which includes the Tweedsmuir-Entiako population, as nationally Threatened. As a signatory to the National Accord, BC is obligated to develop a recovery strategy that addresses the threats to the species and its habitat. A Recovery Strategy for Northern Caribou in the SMNEA in British Columbia was recently completed (Northern Caribou Technical Advisory Committee 2005). That strategy directed the establishment of the West Central Caribou Recovery Implementation Group (WCCRIG) to prepare Recovery Action Plans for local populations, including the Tweedsmuir-Entiako population. The first meeting of the WCCRIG was held in March 2005. The Entiako Park and Protected Area MDS/EMP will be provided to the WCCRIG for integration into the Recovery Action Planning process. The MDS/EMP will then be reviewed and objectives and actions will be adjusted if necessary pending a government approved Recovery Action Plan.

Management Issues

Theme	Issue
First Nations Interests	• The Cheslatta First Nation and the Ulkatcho First Nation assert traditional territory, rights and title in Entiako Park and Protected Area and that their territory has never been ceded, sold or surrendered. • The Cheslatta Carrier Nation has proposed to conduct forest harvesting activities in Entiako Protected Area to attempt to reduce future blowdown that could potentially affect caribou movement in the future. • The Ulkatcho First Nation is concerned with the effects of the mountain pine beetle epidemic and potential prescribed burns. • The Ulkatcho First Nation would like to maintain traditional homesteads and access through the park and protected area and be involved in patrolling the area.
Park classification	• Entiako Protected Area was initially designated as a protected area by the Lakes LRMP and is intended for designation as Class A Park once an ecosystem-based management plan is completed that meets the dual objective of preserving the long-term ecological viability of the area for caribou, while maintaining an acceptable level of mountain pine beetle (MPB) infestation risk to adjacent timber resource values. • 18 mineral claims were excluded from Entiako Provincial Park in the Wolf and Capoose Mineral Claims areas with the intent of including the claims areas in the Class A Park status once the claims lapsed; since the park was established, 17 claims have lapsed, but not all have yet been incorporated into Entiako Provincial Park.
Protecting the Tweedsmuir-Entiako caribou population and winter range	• Tweedsmuir-Entiako caribou are designated as Threatened by COSEWIC and are a Species at Risk under the federal *Species at Risk Act* • The mountain pine beetle outbreak has affected much of the park and protected area and is currently in the grey phase of the attack. • The effects of a large mountain pine beetle outbreak on woodland caribou and

Theme	Issue
	their habitat is unknown; the mountain pine beetle outbreak could potentially result in changes to terrestrial lichen abundance, predation risk, or caribou habitat use patterns. • Caribou winter range components other than pine lichen forests (e.g. subalpine forests for arboreal lichen use) may become more important if caribou undergo major shifts in habitat use in response to the mountain pine beetle epidemic; it is important to maintain all areas of historic range should a shift in habitat use occur. • Fire hazard will increase while red needles remain on trees (due to mountain pine beetles) and then decrease once needles fall; blowdown from mountain pine beetle attack will result in increased fire intensity. • The Tweedsmuir-Entiako caribou population is currently declining due to moderate to high adult mortality and poor calf recruitment; data indicates that the primary cause of caribou mortality is wolf and bear predation. • Entiako Provincial Park and Protected Area protects the core of the winter range, which represents only a portion of the total winter range. Alternate winter ranges outside the Entiako area have been affected by industrial activity and the flooding of the Nechako Reservoir. • Winter recreational activities could disturb and displace caribou from important wintering areas. • Increased road access to the Entiako Provincial Park boundary due to forest harvesting could lead to disturbance and displacement of caribou.
Protecting ecological values	• Fire suppression in protected areas is a lower priority than in the commercial forest; therefore some ecological values in Entiako Park and Protected Area that require minimal or no disturbance will be at risk. • Mountain pine beetles have attacked and killed many of the mature lodgepole pine stands in the park and protected area. • Inventory of natural features, including species and plant communities at risk, is incomplete. • Succession in the absence of fire might change the existing distribution of age classes and species in open forests and scrub-steppe ecosystems. • Colonisation by non-native weeds would reduce integrity of rare plant communities; high use by horses might introduce weeds. • Camping by river users and possibly horse use could impact the rare native grassland on the Entiako River. • Forest harvesting adjacent to the Entiako Provincial Park boundary could impact ecological values. • As forest management develops outside the park boundaries, access to the park will become easier, possibly posing threats to ecological values.
Protecting recreational values	• Previous planning direction requires maintenance of the area's wilderness recreation character. • Eventual blow down of or fire in mountain pine beetle killed trees could affect existing facilities and trails. • A heritage trail runs through the park and protected area; portions of the trail have been maintained while other portions have not. • As forest management develops outside the park and protected area boundaries, access to the park and protected area will become easier, possibly posing threats to wilderness recreation activities by increasing user numbers. • A number of cabins are not yet under permit. • Facilities within the park and protected area need to be managed within a context of high conservation values.
Protecting cultural values	• Little information is available on First Nation cultural values due to lack of a Traditional Use Study.

Theme	Issue
	• Archaeological and cultural sites in the park and protected area (yet to be identified) may be impacted by the mountain pine beetle outbreak or potential wildfire or prescribed fire.
Managing access	• Two existing permit holders (trapper, commercial recreation) have requested the continued use of ATVs to support their activities and for camp maintenance. • The mineral claim areas contain existing roads. • Roads adjacent to Entiako Park terminate close to the park boundary.
Relationship with neighbours	• Mountain pine beetle populations are moving through the park and protected area and through adjacent commercial forests; the Nadina and Vanderhoof Forest Districts are concerned about the risk of a large catastrophic wildfire originating in the park and protected area in the mountain pine beetle outbreak, and moving beyond park and protected area boundaries and into adjacent commercial forests. • The southern half of Tweedsmuir Park lies adjacent to Entiako Park and Protected Area to the west and is administered by Parks and Protected Areas Section in the Cariboo Region, based in Williams Lake; coordination is needed to ensure management objectives in the two adjacent protected areas are complementary.

Management Direction

The Lakes LRMP requires that an ecosystem-based management plan be completed which meets the dual objectives of preserving the long-term ecological viability of the area for caribou while maintaining an acceptable level of mountain pine beetle infestation risk to the adjacent commercial forest. The intent of this Management Direction Statement / Ecosystem Management Plan is to fill that requirement. Ecosystem-based management strategies are based on the Entiako Park and Protected Area Ecosystem Management Study (Cichowski *et al.* 2001) and discussions with government staff.

The management priority in Entiako Provincial Park and Protected Area is to protect and maintain the Tweedsmuir-Entiako caribou population and winter range. Recreational activities compatible with caribou management objectives will focus on summer-oriented non-motorized backcountry activities. The Management Direction Statement / Ecosystem Management Plan will be reviewed every 5 years to incorporate new information on caribou and ecosystem responses to the mountain pine beetle epidemic.

Ecosystem Management

Overall ecosystem management objectives for Entiako Provincial Park and Protected Area are:

- to maintain caribou winter range and population numbers; and,
- to manage natural ecosystem components and processes in as natural a state as possible, while considering adjacent land values.

The natural ecosystem components and processes of Entiako Provincial Park and Protected Area need to be considered within the context of management on the adjacent landbase. With industrial activities such as logging and mining occurring in adjacent areas, the park and protected area plays an important role in providing unroaded habitat. For the Tweedsmuir-Entiako caribou, the Entiako winter range is especially significant since observations suggest that other historic winter ranges outside the park and protected area have been abandoned (Cichowski *et al.* 2001).

Lodgepole pine stands in the Entiako area are mostly older than 50 years, which are suitable host for mountain pine beetles. The near absence of fire, one of the large scale disturbance events, set the stage for an epidemic level outbreak of mountain pine beetles, the other large scale disturbance event, to return mature pine forests to earlier stages of succession. The current large outbreak is due to a combination of a forested landscape made up largely of suitable host and lack of cold winters reducing mountain pine beetle numbers. Since much of the area has already been attacked, mountain pine beetle numbers are declining due to a lack of host trees.

In the past, local weather conditions may have been sufficient to limit mountain pine beetle numbers in the Entiako area. However, with a series of mild winters over the last 10-15 years, mountain pine beetles are currently having a much greater effect on the lodgepole pine forests. With further warmer climate predicted by current climate change models, mountain pine beetles will likely have even greater impacts in the future.

Given these circumstances, the best way to manage the risk of mountain pine beetles and fire is to re-establish a more natural mosaic of forest stands within the landscape. Smaller scale natural disturbances are not considered threatening at this point in time.

Ecosystem management in Entiako Provincial Park and Protected Area requires short and long-term objectives. In the short term, the emphasis is on maintaining caribou winter habitat characteristics. In the long term, the emphasis is on re-establishing natural ecosystem processes into the ecosystem, while maintaining caribou winter habitat and the caribou population.

Ecosystem management objectives for Entiako Provincial Park and Protected Area are:

- to conduct research on the effects of:
  - epidemic mountain pine beetle numbers;
  - endemic mountain pine beetle numbers;
  - surface fire; and,
  - crown fire

  on terrestrial lichen abundance, caribou winter habitat and use, and caribou numbers; and,
- to re-establish ecosystem processes to support a more natural mosaic of different forest stands that reflects the environmental conditions at the time.

Because little information currently exists on the impacts of mountain pine beetles on terrestrial lichens and caribou habitat use, the response of lichens and caribou to the current mountain pine beetle outbreak needs to be investigated to develop meaningful management recommendations. Research on the effects of surface fire and/or crown fire may be achieved with prescribed burning or wild fire. Existing information on caribou habitat use in the Entiako area is based on pre-mountain pine beetle attack conditions; caribou habitat and range use patterns could change following the mountain pine beetle outbreak. Results from research on caribou habitat and habitat use in a post-beetle/fire environment will be used to modify ecosystem management objectives and actions if required.

It is essential to use the current situation to learn more about the impacts of each of these disturbances and management practices on caribou and caribou habitat to help in future management of this population and current management of other populations.

In addition to conducting research into impacts of various fire/mountain pine beetle regimes, long-term monitoring should be initiated/continued to monitor:

- the current mountain pine beetle outbreak to its conclusion;
- caribou use of beetle killed stands at the stand and landscape level;
- terrestrial lichen response to the mountain pine beetle outbreak;
- long-term changes to stand and landscape level vegetation structure; and,
- fall down rate of beetle killed trees and corresponding fuel hazards.

No management actions are proposed to reduce or contain mountain pine beetle numbers in Entiako Provincial Park and Protected Area for the current outbreak because the mountain pine beetle outbreak has already affected adjacent areas and has subsided due to a reduction of host trees. Now that the mountain pine beetle outbreak has subsided in the area, mountain pine beetle risk in the area currently impacted by mountain pine beetles will be considerably reduced for at least 40 years. Fire suppression will be limited to protection of facilities and improvements in

the park and protected area, and of adjacent forest values. Commercial forest harvesting is prohibited under the *Park Act*; therefore, salvage logging will not be permitted.

Because of the potential ecological effects of climate change over the long term, the long-term management objective is to re-establish a natural disturbance regime rather than to actively design a desirable forest mosaic. Current climate change models predict an increase in average annual temperatures. With a warming trend, fire and mountain pine beetles will likely have increased impacts and the general ecosystem structure may eventually change.

Although the goal is to reintroduce natural disturbance processes, the management priority will continue to be maintenance of caribou winter habitat and the caribou population. Historically, caribou were able to switch to other winter ranges if large disturbances significantly impacted all or part of one winter range. Now, caribou do not have as many winter range options, so maintaining caribou winter range in the Entiako area is critical. If the proposed research shows that a natural disturbance regime may jeopardize caribou and caribou habitat, it may be necessary to actively manage the landscape forest mosaic over the long term.

Recreation and Facility Management

The overall recreation management objective for Entiako Park and Protected Area is to allow recreational activities that are compatible with caribou management objectives. As caribou use the park and protected area primarily during winter, the focus will be on summer oriented non-motorized backcountry activities. Management of existing facilities and potential development will reflect needs of caribou and other conservation values. There are a number of existing facilities that are grandfathered and considered consistent with the park and protected area values. The development of any additional facilities is encouraged to be located outside of the park and protected area. If development of any new facilities is to be considered, they will need to be compatible with the higher conservation values in the area and of a relatively small scale.

Priority Management Objectives and Strategies

The vision for Entiako Provincial Park and Protected Area includes protection of the Tweedsmuir-Entiako caribou population and winter range as a priority, and summer-oriented non-motorized backcountry recreational use. The following table describes management strategies to deal with outstanding issues raised. In addition, Table 3 contains a list of acceptable land and resource uses for this protected area.

Objective	Strategy
ECOSYSTEM MANAGEMENT	
FIRST NATIONS AND CULTURAL HERITAGE VALUES	
To facilitate access for First Nations values to exercise aboriginal rights	• Facilitate access for the Cheslatta First Nation and the Ulkatcho First Nation to Entiako Park and Protected Area for food, social and ceremonial purposes, subject to conservation and public safety.
To involve First Nations in the planning and management of Entiako Park and Protected Area	• Work collaboratively with the Cheslatta First Nation and the Ulkatcho First Nation on the planning and management of Entiako Park and Protected Area, incorporating traditional knowledge when available.
To protect the park and protected area's cultural heritage values	• Encourage archaeological and traditional use studies involving elders and other knowledgeable First Nations representatives; work with First Nations to obtain funding. • Compile existing information on cultural heritage values in collaboration with appropriate First Nations representatives; prepare a Cultural Features Information Summary. • Investigate the need to protect cultural or archaeological sites with appropriate First Nations representatives. • Inform appropriate First Nations representatives if BC Parks becomes aware of cultural sites.
To facilitate economic opportunities for First Nations	• Encourage economic opportunities for the Cheslatta First Nation and the Ulkatcho First Nation that are consistent with Provincial legislation, the common law, and the Management Direction Statement/Ecosystem Management Plan.
NATURAL VALUES (GENERAL)	
To protect natural values	• Inventory fauna and flora, including species and plant communities at risk. • Develop an information package for the public regarding the mountain pine beetle outbreak and its effects on other natural values. • Work with the Ministry of Energy, Mines and Petroleum Resources to assess and identify clean up/rehabilitation actions for lapsed mineral claims.
TWEEDSMUIR-ENTIAKO CARIBOU POPULATION AND WINTER RANGE	
To maintain the caribou population and caribou winter habitat	• Work with other agencies with responsibility for caribou management to meet caribou management objectives. • Manage for continued availability and renewal of high value caribou winter habitat. • Determine the effects of the current mountain pine beetle outbreak on caribou winter habitat use patterns in the park and protected area. • Define space and range requirements and ensure an adequate supply of mature forested habitat for space (predator avoidance) and range rotation (winter habitat) requirements. • Minimize forest edge habitat favoured by moose. • Do not allow winter recreation activities and access that result in disturbance or displacement of caribou. • Do not allow recreational snowmobile activity. • Monitor caribou winter habitat use in response to the mountain pine beetle outbreak using radio-collared caribou. • Develop and implement strategies, if necessary, for managing caribou winter range use. • Inventory the caribou population as necessary. • Continue to monitor causes and rates of adult mortality and rates of calf recruitment during and following the mountain pine beetle outbreak. • Consider managing predator and alternate prey numbers if required to maintain the

Objective	Strategy
	long-term viability of the caribou population. • Provide the MDS/EMP to the West Central Caribou Recovery Implementation Group for integration into the Recovery Action Planning process. • Review the MDS/EMP and adjust objectives and actions if necessary pending a government approved Recovery Action Plan. • Work with other agencies towards a coordinated strategy for maintaining the Tweedsmuir-Entiako caribou population in the absence of a Recovery Action Plan; tools for managing the caribou population outside of the park and protected area include Ungulate Winter Ranges and Sustainable Forest Management Plans.
To maintain terrestrial and arboreal caribou forage lichens	• Protect Dry Lichen and Lichen Moss habitats and arboreal lichen habitats (subalpine, forested wetlands, wetland fringes) from human disturbance. • Determine the impacts of natural disturbances (fire, mountain pine beetles) and natural disturbance management treatments on terrestrial and arboreal lichens; conduct prescribed burns if necessary for research on the impacts of fire. • Determine the role of competition in the distribution of terrestrial lichens. • Continue to monitor the response of terrestrial lichens to the mountain pine beetle outbreak. • Consider conducting prescribed burns if lichens are being outcompeted by other vegetation in the long term.
OTHER WILDLIFE	
To maintain trumpeter swan wintering habitat	• Inventory potential trumpeter swan wintering habitat. • Restrict access and visitor disturbance during winter in known trumpeter swan wintering areas.
To maintain possible sandhill crane nesting habitat	• Inventory potential sandhill crane nesting habitat. • Restrict access and visitor disturbance during nesting and summer in known nesting areas. • Identify potential impacts of natural disturbances on sandhill crane nesting habitat. • Minimize/protect known nesting habitat from natural disturbance if necessary.
To maintain possible American white pelican feeding habitat	• Inventory potential American white pelican feeding habitat. • Identify potential impacts of natural disturbances on American white pelican nesting habitat. • Ensure management activities do not impact important feeding habitat.
To monitor population status of large mammals	• Inventory moose, wolves and grizzly bears.
FISH	
To maintain kokanee feeding and spawning habitat	• Inventory and assess potential kokanee feeding and spawning habitat. • Use fire suppression to prevent high intensity crown fires burning to banks of lake inlets and outlets within 1-2 kilometres of kokanee lakes.
VEGETATION	
To maintain whitebark pine	• Inventory distribution of whitebark pine and whitebark pine blister rust in the Fawnie Mountains. • Investigate replanting areas with nursery grown seedlings and/or conducting prescribed burns to stimulate natural regeneration to increase whitebark pine populations. • Aggressively manage mountain pine beetle attack on whitebark pine.
To protect Two-coloured sedge	• Inventory distribution of two-coloured sedge in the Fawnie Mountains. • Protect known locations of two-coloured sedge from human impacts. • Determine the role of fire in preventing forest encroachment at this locality.
To protect Lodgepole pine - Juniper – Ricegrass (SBSdk/02)	• Verify distribution of Lodgepole pine – Juniper – Ricegrass (SBSdk/02) plant communities in the dry cool subzone of the Sub-Boreal Spruce biogeoclimatic zone. • Protect these plant communities from human disturbance.

Objective	Strategy
To protect south facing grassy slopes (SBSdk/81 and SBSdk/82)	• Inventory and assess potential rare south facing grasslands in the dry cool subzone of the Sub-Boreal Spruce (SBSdk) biogeoclimatic zone. • Determine impacts of fire suppression on these grasslands. • Conduct prescribed burning and/or allow wildfires to burn to recover these sites if fire suppression is found to have reduced their extent.
To protect Black cottonwood – Red osier dogwood – Prickly rose (SBSdk/08), and Bulrush marsh (SBPSmc/W15)	• Inventory distribution of the Cottonwood – Red osier dogwood – Prickly rose plant community (SBSdk/08) in the dry cool subzone of the Sub-Boreal Spruce biogeoclimatic zone, and the Bulrush marsh (SBPSmc/W15) plant community in the moist cold subzone of the Sub-Boreal Pine Spruce biogeoclimatic zone. • In the short term, protect these plant communities from disturbance • Over the medium to long term, determine conditions necessary for maintaining this plant community and implement them.
To protect Timber oatgrass – small flowered penstemon native grassland from disturbance	• inventory distribution of the Timber oatgrass – small flowered penstemon native grassland • Submit a report describing this community to the BC Conservation Data Centre. • Protect these grasslands from human disturbances including camping and horse grazing to prevent site degradation and introduction of invasive species. • Determine processes that lead to the formation of these grasslands (i.e. fluctuating water table, cold air ponding, fire, etc.).
FIRE	
To re-establish natural fire pattern	• Develop a Fire Management Plan that addresses: ○ increased fire activity in Entiako Provincial Park and Protected Area ○ a proactive strategy using wildfire and prescribed fire to achieve the natural fire pattern; ○ natural and human values that require protection from fire; ○ values outside the park and protected area at risk from wildfires and prescribed fires managed and conducted within the park and protected area; ○ involvement with managers of adjacent lands. • Conduct prescribed burns if necessary to break up fuel continuity and concentration and to strengthen down wind boundaries as firebreaks. • Conduct prescribed burns to research the impacts of fire on caribou habitat and caribou use. • Conduct fire suppression to protect facilities and improvements in the park and protected area and to protect adjacent forest values. • Conduct a forest fire fuel inventory to classify present and future fuel types.
MOUNTAIN PINE BEETLES	
To document the current mountain pine beetle outbreak	• Conduct overview flights and/or detailed aerial surveys annually in July subject to available funding.
To minimize further mountain pine beetle impacts following the current outbreak	• Suppress mountain pine beetle outbreaks following the current outbreak. • Modify stands (beetle-proofing, high hazard host removal) where natural or human values warrant protection.
To re-establish natural forest age-class mosaic	• Conduct prescribed burns to reduce the susceptibility of high hazard stands creating a mosaic of diverse age classes if needed.
OTHER MANAGEMENT	
To update park classification	• Designate Entiako Protected Area as a Class A Provincial Park following approval of the Entiako Provincial Park and Protected Area Management Direction Statement and Ecosystem Management Plan. • Incorporate lapsed mineral claims into Entiako Provincial Park.
To maintain the park and protected area's recreation	• Manage for backcountry wilderness recreation opportunities with an emphasis on summer activities.

Objective	Strategy
values	• Consider proposals to maintain the Bella Coola Trail for non-motorised recreational use; work with First Nations, guide outfitters, trappers and local community members. • Work with Ministry of Forests and Range to minimise impact of harvesting in adjacent areas on recreational users (e.g. timing of operations, visual quality considerations). • Recommend that facility owners conduct hazard assessments and actions for fire and blowdown risks. • Allow only non-motorized winter activities for commercial or private recreation use. • Allow only winter recreation activities and access that do not result in disturbance or displacement of caribou. • Do not allow recreational snowmobile activity. • Ensure all structures and guided recreational activities are under permit. • If recreational use increases as access to the park becomes easier, monitor impacts and manage appropriately (e.g. access control); work with Ministry of Forests and Range and Forest Licensees to restrict motorized access to the park and protected area from new roads. • Allow maintenance and basic upgrades of existing facilities consistent with park and protected area conservation values.
To manage access	• Limit horseback riding (guide-outfitter and recreational use) to designated trails; work with guide-outfitter and horseback riding clubs to minimise impacts; provide information on low impact horse riding practices to visitors; monitor horse use and ecological damage; manage appropriately. • Work with trap line holders and commercial recreation permit holders to limit trail development in the park and protected area. • Work with the Ministry of Energy, Mines and Petroleum Resources to ensure mineral claim roads are decommissioned. • Close or decommission existing access and trails within the protected areas, where appropriate, to support primitive recreational experiences (Lakes LRMP). • Limit snowmobile use to trap line holders, on designated trails only. • Limit snowmobile use by the commercial operator to the area of PUP 85700-40/SK0210383 and to the designated trail to access their cabin on Entiako Lake for camp maintenance. • Limit continued ATV use by the existing trap line holder to designated trails within Entiako Protected Area. • Limit ATV use by the commercial operator to the area of PUP 85700-40/SK0210383 and to the designated trail to access their cabin on Entiako Lake. • Do not allow snowmobile use for any reason in the Fawnie Mountains.
To maintain relationships with park neighbours	• Develop long - term mountain pine beetle management plan for the park in co-operation with Ministry of Forests and Range (Vanderhoof and Nadina Districts). • Work with Ministry of Forests and Range (Vanderhoof and Nadina Districts) and forest companies to minimise impacts of forest harvesting on adjacent lands on ecological values. • Work closely with the Parks and Protected Areas Section in the Cariboo Region in Williams Lake to ensure that management objectives for Entiako Park and Protected Area are considered in management of the southern half of Tweedsmuir Park.

The following management actions are recommended as high priority for implementation:

- facilitate access for the Cheslatta First Nation and the Ulkatcho First Nation to Entiako Park and Protected Area for food, social and ceremonial purposes subject to conservation and public safety;
- work collaboratively with the Cheslatta First Nation and the Ulkatcho First Nation on the planning and management of the Entiako Park and Protected Area incorporating traditional knowledge when available;
- encourage economic opportunities for the Cheslatta First Nation and the Ulkatcho First Nation that are consistent with Provincial legislation, the common law, and the Management Direction Statement/Ecosystem Management Plan;
- encourage archaeological and traditional use studies involving elders and other knowledgeable First Nations representatives; work with First Nations to obtain funding;
- conduct research on response of terrestrial lichens and general ecosystem components to fire and mountain pine beetles;
- create fire breaks on the eastern boundary of the park and protected area;
- conduct research/monitoring of caribou habitat use in response to the current mountain pine beetle outbreak and to potential fire outbreaks resulting form the mountain pine beetle epidemic;
- initiate long-term vegetation structure monitoring;
- determine the distribution of whitebark pine and whitebark pine blister rust;
- determine the presence and distribution of rare wildlife species, rare plant communities, rare plants and the Timber oatgrass – small flowered penstemon native grassland; and,
- assess and identify clean up / rehabilitation actions for lapsed mineral claims.

Ecosystem Management Area Priorities

Management priorities for each Ecosystem Management Area are presented in Table 4 and are based on values contained within each EMA.

Zoning Plan

- Create 3 Special Feature zones (Figure 4):
  - the south side of McGibbon Hill (rare grassland communities);
  - Capoose Creek just upstream of Capoose Lake (kokanee and rainbow trout spawning habitat); and,
  - the Entiako River floodplain from Entiako Lake to 4 km downstream (rare native grassland, kokanee and rainbow trout spawning habitat, trumpeter swan winter habitat).
- Where grasslands occur in Special Feature Zones protect from human disturbance including camping and horse grazing to prevent site degradation and introduction of invasive species.
- Zone the remainder of the park and protected area as Wilderness Recreation to maintain ecological values while allowing primarily summer oriented, non-motorized backcountry recreational opportunities.

Table 3. Entiako Provincial Park and Protected Area Summary Table of Land and Resource Use Commitments		
Activity/Use/Facility	**Acceptable Uses**	
	Park	**Protected Area**
First Nations Uses	Y	Y
Hunting	Y	Y
Fishing	Y	Y
Trapping	N2	N2
Grazing (domestic livestock)	N2 (associated with guide-outfitting and recreational activities only)	N2 (associated with guide-outfitting and recreational activities only)
Recreational gold panning/rock hounding	N	N
Utility corridors	N	N
Communication sites	N	N
Horse use	Y	Y
Pack animals (non-equines)	N	N
Guide outfitting (hunting)	Y	Y
Guide outfitting (fishing)	Y	Y
Guide outfitting (nature tours)	Y	Y
Guide outfitting (river rafting)	Y	Y
Cat-assisted skiing	N	N
Ski hills	N	N
Commercial recreation (facility-based)	N2	N2
Commercial recreation (non-facility-based)	Y	Y
Backcountry huts	M	M
Water control structures	N	N
Fish stocking and enhancement	N	N
Road access	N	N
Off-road access (snowmobiling)	N (except by designated licensed tenure holders)	N (except by designated licensed tenure holders)
Off-road access (motorised)	N (except by designated licensed tenure holders)	N (except by designated licensed tenure holders)
Off-road access (mechanical activities – e.g. mountain biking))	N (except by designated licensed tenure holders)	N (except by designated licensed tenure holders)
Motorised water access	Y	Y
Aircraft access	Y	Y
Fire management (suppression)	Y	Y
Fire management (prescribed fire management)	Y	Y
Fire management (prevention)	Y	Y
Forest insect/disease control	N1	N1
Noxious weed control	Y	Y
Exotic insect/disease control	Y	Y
Scientific research (specimen collection)	M	M
Scientific research (manipulative activities)	M	M

Y = allowed subject to conditions identified in the management direction statement or management plan
M = may be permitted if compatible with protected area objectives
N = not allowed
N1 = allowed for expressed management purposes only
N2 = present and allowed to continue, but not normally allowed

Table 4. Proposed management objectives and priorities for Ecosystem Management Areas (EMA) in Entiako Provincial Park and Protected Area.

	EMA 1	EMA 2	EMA 3	EMA 4	EMA 5
Caribou winter range					
Maintain caribou winter habitat	Moderate	High	High	Moderate-High	High
Maintain terrestrial caribou forage lichens	Moderate-High	High	High	High	High
Maintain arboreal caribou forage lichens	Moderate-High	High	High	High	High
Other wildlife					
Maintain trumpeter swan wintering habitat	Moderate		High	High	Moderate
Maintain possible sandhill crane nesting habitat	High		High		
Maintain possible American white pelican feeding habitat	High		High		
Fish					
Maintain kokanee feeding and spawning habitat			High		High
Vegetation					
Maintain whitebark pine					High
Protect two-coloured sedge					High
Protect Lodgepole pine - Juniper – Ricegrass (SBSdk/02)		High		High	
Protect South facing grassy slopes (SBSdk/81 and SBSdk/82)		High			
Protect Black cottonwood – Red osier dogwood – Prickly rose (SBSdk/08)		High			
Protect Bulrush marsh (SBPSmc/W15)	High	High	High		
Protect Timber oatgrass – small flowered penstemon native grassland from disturbance			High		
Fire					
Re-establish natural fire pattern	High	High	High	High	High
Mountain pine beetles					
Document the current mountain pine beetle outbreak	High	High	High	High	High
Minimize further mountain pine beetle impacts following the current outbreak	High	High	High	High	High
Re-establish natural forest age-class mosaic	High	High	High	High	High

Figure 4

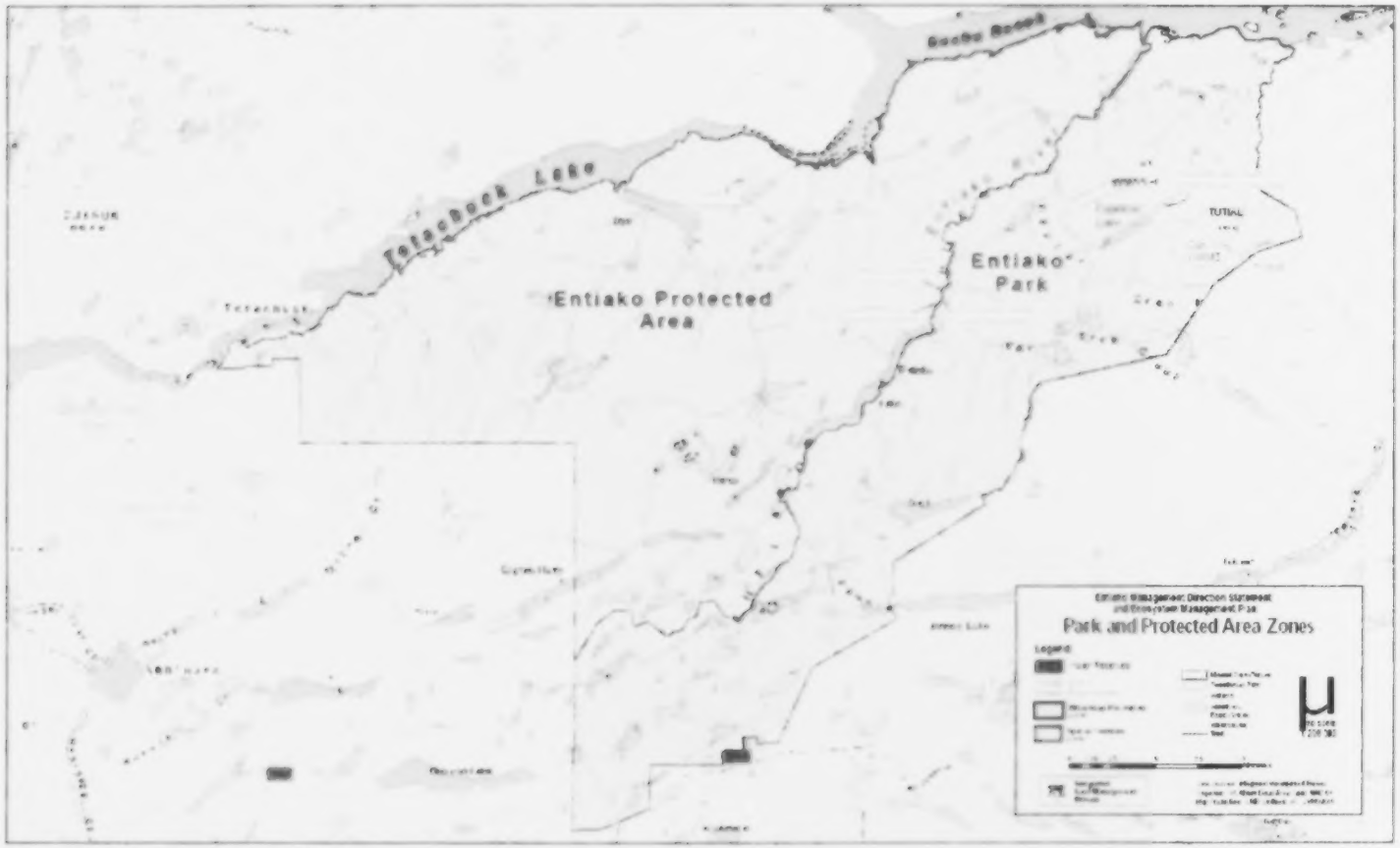

Figure 4. Entiako Park and Protected Area Zoning

Consultation and Future Planning

BC Parks (Ministry of Environment, Environmental Stewardship Division, Park and Protected Areas Section) is responsible for planning, administering and managing protected areas (Class A parks, protected areas, recreation areas, ecological reserves) and will be responsible for implementing the strategies set out in the Entiako Provincial Park and Protected Area Management Direction Statement and Ecosystem Management Plan. The Entiako Provincial Park and Protected Area Management Direction Statement and Ecosystem Management Plan also fulfills the requirement of an ecosystem-based management plan, and guides management of ecosystem-based issues.

BC Parks will consult with appropriate First Nations, stakeholders and community groups as issues arise. The biggest challenge will be to manage park and protected area values in the aftermath of the mountain pine beetle outbreak. As such, ecosystem-based management will evolve as more information is collected on the response of ecological values to the outbreak over time.

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APPENDIX A

Ecosystem Management Areas in Entiako Provincial Park and Protected Area

Ecosystem Management Area 1

Ecosystem Management Area 1 (EMA1) encompasses the southwestern portion of Entiako Provincial Park and Protected Area and lies almost entirely within the moist cold subzone of the Sub-Boreal Pine Spruce (SBPSmc) biogeoclimatic zone. Forests in this EMA are mostly pole and young lodgepole pine stands, 60-250 years in age.

This EMA contains mostly moderate to low value caribou winter habitat; snow accumulation in this EMA is slightly higher than in the eastern part of the park and protected area, making it less attractive to caribou than other parts of the winter range.

Most of the lakes in EMA1 are shallow, which may have extremely low oxygen levels during the winter (winterkill) and may be unable to support permanent populations of rainbow trout. Peat shorelines, often associated with shallow lakes, provide important winter habitat for river otters. The shallow lakes may also provide feeding habitat for American white pelicans (red listed) and with associated marshes, nesting habitat for sandhill cranes (blue listed). All lakes and streams in EMA1 drain into the Entiako River.

Fires in this EMA are typically 50-500 hectares in size and occur every 125-175 years. Fire suppression has resulted in very few forests less than 40 years in age.

Ecosystem Management Area 2

Ecosystem Management Area 2 lies in the northwestern portion of Entiako Protected Area and includes all of the dry cool subzone of the Sub-Boreal Spruce (SBSdk) biogeoclimatic zone, as well as a portion of the moist cold subzone of the Sub-Boreal Pine-Spruce (SBPSmc) biogeoclimatic zone in Entiako Protected Area. Forests in this EMA consist of a mix of pole, young and mature pine stands, 60-250 years in age.

This EMA contains mostly high value caribou habitat. Caribou concentrate in the area in early winter following fall migration and in late winter prior to spring migration. They also use the northeastern portion (east of Aslin Creek) mostly during mid to late winter. Elk and deer that may inhabit Entiako Provincial Park and Protected Area are likely found mostly in this EMA.

All water features in EMA2 drain directly into Tetachuck or Natalkuz lakes; most of the streams and lakes that drain into those lakes are located in this zone. EMA2 contains no large lakes or fast flowing streams and fish are present only in some of the larger streams and lakes.

EMA2 contains most of the rare plant associations found or likely present in Entiako Provincial Park and Protected Area since most of these occur in the dry cool subzone of the Sub-Boreal Spruce (SBSdk) zone. The blue listed Lodgepole pine – Juniper – Ricegrass (SBSdk/02) plant association is equivalent to the Dry Lichen caribou habitat site unit and occurs primarily in the

Bryan Arm area. South facing grassy slopes (SBSdk/81 and SBSdk/82; both red listed) are found on McGibbon Hill. The red-listed Black cottonwood – Red osier dogwood – Prickly rose (SBSdk/08) plant association may also occur within EMA2 as well as the Bulrush marsh (SBPSmc/W15).

Also, because the dry cool subzone of the Sub-Boreal Spruce (SBSdk) biogeoclimatic zone is not well represented in other protected areas, EMA2 plays an important role in representing SBSdk ecosystems within the protected area system.

On average, fires in EMA2 occur every 100-150 years in the SBSdk and 125-175 years in the SBPSmc and are 50-500 hectares in size. Fire suppression in this EMA has resulted in few stands less than 40 years in age.

Ecosystem Management Area 3

Ecosystem Management Area 3 lies in the central and southern portions of Entiako Provincial Park and Protected Area, mostly within the moist cold subzone of the Sub-Boreal Pine-Spruce (SBPSmc) biogeoclimatic zone. The moist cold subzone of the Sub-Boreal Spruce (SBSmc) biogeoclimatic zone occurs to a lesser extent in the northwest portion of this EMA. Forests consist of mostly young and mature lodgepole pine stands, 60-250 years in age.
EMA3 represents the core of the Tweedsmuir-Entiako caribou winter range and contains high value caribou habitat and migration corridors. This EMA includes most of the core winter range identified as Caribou Management Zone 4 by Cichowski and Banner (1993).

Trumpeter swans are known to winter along the Entiako River in EMA3. This EMA may also provide nesting habitat for sandhill cranes (blue listed) and feeding habitat for American white pelicans (red listed).

EMA3 contains significant riparian habitat along the Entiako River, Fawnie Creek and associated tributaries. The rare Timber oatgrass – Small flowered penstemon native grassland is found along the floodplain of the Entiako River, north of Entiako Lake. The blue listed Bulrush marsh ecosystem (SBPSmc/W15) may also occur in this EMA.

Most lakes and streams in this EMA empty into the Entiako River system; only a few small streams adjacent to the boundary of EMA2 empty directly into Tetachuck or Natalkuz lakes. EMA3 contains large lakes (Entiako Lake, Cow Lake) and fast flowing streams (Entiako River, Fawnie Creek) that provide important feeding and spawning habitat for kokanee and rainbow trout populations.

Fires in this EMA average 50-500 hectares in size and occur every 125-175 years. Fire suppression has had significant impacts on the forest mosaic in this EMA.

Ecosystem Management Area 4

Ecosystem Management Area 4 lies in the northeastern corner of Entiako Provincial Park and Protected Area and is the smallest of the 5 ecosystem management areas. It consists of both the dry cool subzone of the Sub-Boreal Spruce (SBSdk) zone, and the moist cold subzone of the Sub-

Boreal Spruce (SBSmc) zone. Forests are a mix of pole, young and mature lodgepole pine stands, 60-250 years in age.

Caribou habitat in this EMA is moderate to high value and caribou use this EMA mostly during mid to late winter.

The Lodgepole pine – Juniper –Ricegrass (SBSdk/02) ecosystem is found in this EMA near the mouth of the Entiako River and along the northeastern boundary.

On average, fires in this EMA occur every 100-150 years and are 50-500 hectares in size. Fire suppression has contributed to the lack of younger stands in this EMA.

Ecosystem Management Area 5

Ecosystem Management Area 5 includes the Fawnie Mountains and surrounding area. The Fawnie Mountains are the only major topographic relief in all of Entiako Provincial Park and Protected Area.

EMA5 is made up primarily of the moist, very cold subzone of the Engelmann Spruce – Subalpine Fir (ESSFmv) biogeoclimatic zone and the moist cold subzone of the Sub-Boreal Spruce (SBSmc) zone. Forests in this EMA are mostly mature and young pine and are generally older (mostly >140 years) than forests in other areas.

Caribou use EMA5 primarily during mid to late winter when they forage for terrestrial lichens in alpine habitat and for arboreal lichens in subalpine habitat in the Fawnie Mountains. Caribou use of this area could increase if caribou are unable to access low elevation portions of their winter range or if terrestrial lichens at low elevations become less available.

The only recorded occurrence of a rare plant species (Two-coloured sedge – blue listed) in Entiako Provincial Park and Protected Area is located on Mt. Swannell in this area. Also, whitebark pine, which is currently imperiled due to white pine blister rust, likely occurs above 1200 meters in the Fawnie Mountains.

EMA5 contains Capoose Lake (large lake) and Capoose Creek (fast flowing stream), which support populations of rainbow trout and kokanee.

Fires in this area average 50-150 hectares in size in the Engelmann Spruce-Subalpine Fir (ESSF) zone and 50-500 hectares in the Sub-Boreal Spruce (SBS) zone. On average, fires occur every 200-300 years in the ESSF and 100-150 years in the SBS. Because of the slightly longer mean fire return interval in the ESSF and smaller fire sizes, fire suppression may have had less impact on forest structure in EMA5 than in other areas of Entiako Provincial Park and Protected Area.

APPENDIX B

Management recommendations from the Lakes LRMP and Vanderhoof LRMP

General Direction for Protected Areas

Lakes LRMP

Land use within protected areas emphasizes resource conservation to the degree that resource extraction is excluded and other land uses may be limited or excluded. Land use and management within park areas is guided by park management plans, or interim management direction statements which provide temporary management guidance for new protected areas, pending development of comprehensive park management plans. The Province has developed guidelines regarding resource and recreation use in protected areas, and the Lakes District LRMP has developed interim measures for mountain pine beetle management pending park designation.

The establishment of new protected areas plays a key role in the realization of the Plan's environmental conservation objectives, particularly through contributions towards ecosystem representation, general biodiversity maintenance and the protection of key habitat areas for rare and threatened species. New protected areas contribute significantly to recreational and cultural heritage objectives, as well as to long-term economic objectives. Chapter 5 contains further evaluative information on the contribution that the new protected areas make towards environmental and socio-economic objectives for the region. (Throughout this section, "Park" refers to "Protected Area.")

Park Planning

To develop comprehensive park management plans, over time, for each approved protected area in order to ensure the maintenance of the conservation, recreation and cultural heritage values within the new protected areas.

- Park management plans will be developed for each approved protected area in accordance with the availability of budget resources and the priority resource values identified in the summary of new protected areas in Table 5.
- Park management plans will be developed with the benefit of extensive public and inter-agency participation. Among other things, the plans will define park-specific management objectives, acceptable uses, acceptable levels of use, zoning, and other strategies that will minimize conflicts and help ensure the integrity of important park values.
- Where appropriate, resource planning objectives and strategies on lands adjacent to, and within, protected areas will be complimentary (e.g., mountain pine beetle management, visual quality from viewpoints within a park; access management adjacent to sensitive features within a park).
- Park management planning processes will include consultation with tourism industry representatives in order to examine potential commercial opportunities within provincial parks, subject to the prime goal to protect conservation, recreation and cultural heritage values within the parks.
- Commercial opportunities will be assessed with regard to their compatibility with park management plans. Generally, physical commercial infrastructure (e.g., roads, lodgings, staging areas, etc.). will be directed outside of park boundaries in order to minimize park impacts.
- Pending the development of comprehensive park management plans for each protected area, *Management Direction Statements* will be used to direct park management and operations.

Existing Tenures and Inholdings

To recognize the legal rights of existing tenure holders and landowners within newly established parks in the district, and to deal fairly with those interests.

- Existing mineral and timber tenures and other tenures/encumbrances associated with commodity extraction (e.g., gravel reserves) will be discontinued within new protected areas. The terms of discontinuance will be negotiated with owners of existing tenure interests, in accordance with provincial policy respecting resource rights

compensation. Tenure discontinuance negotiations will also consider ongoing silviculture obligations (e.g., free-to-grow requirements), rehabilitation of harvested areas, and decommissioning and rehabilitation of roads in key locations.

- Existing tenures within new parks for utility rights-of-way, communication sites, grazing, commercial backcountry recreation, guide-outfitting, trapping, water works and use, and other tenures not based in commodity extraction, will be permitted to continue, in accordance with the existing management conditions attached to those tenures. In the future, the management conditions attached to those tenures may be amended to comply with the requirements of BC Parks policy and park management plans developed for individual protected areas.
- Consistent with tenure document provisions and current assignment/transfer procedures, holders of existing tenures of the type identified in strategy above may assign/transfer their tenures to different parties. However, where existing tenures lapse or are voluntarily surrendered by a tenure holder, the province is under no obligation to re-issue the tenure rights.
- Further to the above strategies, trapping will continue as an authorized, grandparented use in protected areas. Extinguishment of tenure will occur on a voluntary basis only, through purchase by BC Parks at fair market value.
- Alterations to conditions of tenure will be based on sound resource management principles with respect to the activity in question (e.g., sustainability of trapping, guiding, grazing activities) and/or avoidance of impacts to the resource values upon which the protected area was established (e.g., caribou, biodiversity, recreation etc.). Alterations will be made in consultation with the tenure holder. Where alterations to conditions of tenure act, in practical terms, to extinguish tenure, it is recommended that the tenure holder be fairly compensated.
- Private land is excluded from parks according to Parks policy. Existing owners of private land will therefore continue to exercise their rights. In addition, where private land is surrounded by new park and the only access is through park, existing rights to existing access to those properties will continue.

Natural Occurrences

To protect adjacent resource values and private property, as appropriate, from natural disturbances in protected areas.

- Natural occurrences (e.g., fires, insects, and forest disease) within park boundaries will be managed to respect resource values both within and adjacent to park areas. This will be achieved by a district Memorandum of Understanding (MOU) to be developed between Parks and Ministry of Forests. It should consider joint determination of the point at which natural occurrences within parks become a risk to adjacent values, and the appropriate action to be taken to reduce said risk (using available management options).
- In the interim prior to park designation, strategies for the management of mountain pine beetle within new protected areas will follow government direction for mountain pine beetle management in protected areas. The direction outlines specific management provisions for the Entiako. Specific mountain pine beetle management provisions shall be developed for other new protected areas on a case by case basis.
- Mountain pine beetle management strategies will be developed for each protected area, on a case by case basis, as a component of park management plans. Mountain pine beetle management within park areas will consider those recommendations outlined in the *Interim Mountain Pine Beetle Management Strategy for Proposed Protected Areas*, consistent with current legislation.
- Where land management includes prescribed burning, fire management plans will be developed for areas within new parks to protect public safety, facilities and resource values on adjacent lands.

Park Management

To maintain ecosystem representation and integrity, and ensure protection of key resource values and natural features.

- Park management emphasis will be placed on maintaining the ecosystems, resource values and natural features for which protected areas were established.
- Management interventions will not significantly alter natural ecological, hydrological and geomorphic processes except for express management purposes as defined by a protected area management plan.
- Where existing grazing tenures occur, sensitive plant communities (i.e., steep south facing slopes) will be maintained in conjunction with MOF through application of range management guidelines.

- Sound park management relies on good information. BC Parks will work together with other agencies to collect resource inventory for new park areas.
- Vegetation management will be undertaken, where appropriate, where previously open forests and grasslands have become ingrown as a result of fire suppression. Fire will be the primary means of restoring natural grasslands for conservation purposes only.
- The contribution of new protected areas to Landscape Unit objectives will vary over time with both natural and management processes. The Old Growth within these areas will, over time, contribute to LU biodiversity objectives.

To ensure protection of key species and their habitats.
- BC Parks will work with other agencies to ensure connectivity of wildlife habitat between parks and surrounding areas.
- Opportunities to establish benchmarks for scientific study and management of rare, endangered and at risk species will be investigated.
- Rare, endangered and at risk species, and their habitats, will be protected.
- Habitat, cover and site specific features for non-key fish and wildlife species will be considered in management processes.

To provide/maintain primitive or backcountry recreation opportunities.
- While BC Parks will continue to manage parks to provide a wide range of recreational experiences, protected areas will provide the primary opportunities for primitive and backcountry recreation. Where appropriate, existing access and trails within protected areas may be closed or decommissioned to support primitive recreational experiences. Similarly recreational access to some areas may be limited to maintain the quality of the recreational experience.
- Levels of recreational use and associated impacts will be monitored and management applied, where necessary, to maintain the backcountry qualities of an area.
- Promote good visual design of logging and appropriate access management in areas adjacent to parks.

To plan and manage parks in a manner which reflects the cultural heritage of those areas.
- Local First Nations will be consulted to identify traditional use areas within parks.
- Options to work in cooperation with First Nations in the planning and management of parks will be pursued.
- Non-aboriginal history will be considered in park management plans.

Vanderhoof LRMP

General recommendations include;
- Endorse the general strategy to **preclude all commercial timber harvesting (including salvage operations) in Protected Areas**. In the event of a severe forest health situation, B.C. Parks should consult with the Ministry of Forests and B.C. Environment to develop management strategies considering all other values identified in this LRMP.
- Permit, where compatible with specific management strategies in the Protected Areas, or with the Parks Management Plans:
- Commercial Backcountry Recreation (CBR) activities (e.g. guiding, hiking, horseback riding) and temporary campsites associated with them.
- Snowmobile use in designated areas.
- Avoid new permanent CBR development (e.g. lodges).
- Endorse the continued monitoring of forest health (beetle populations) by the Ministry of Forests in cooperation with BC Parks, at least until BC Parks staffing and resources are able to accommodate the enhanced stewardship direction included in this Plan.
- Future Parks management planning processes are expected to provide further clarification to forest health management strategies during implementation of this Plan.

This LRMP recognizes that trapping, hunting and guiding are acceptable activities within a Protected Area. Where an activity is permitted, it is assumed to include transfer of tenure and use of all customary methods and tools.

Additionally, all Protected Areas have undergone statusing by individual agencies (Lands, Energy and Mineral Division, Forest Service, etc.).

Grazing Policy for Protected Areas

Domestic livestock grazing may be allowed within a newly created Protected Area where it is compatible with the management plan for the area.

Generally, livestock grazing will be included in the Protected Area only if it is already in place at the time of designation. The only Protected Area in this LRMP area currently supporting grazing tenures is the Stuart River RMZ. Within Protected Areas it is also noted that the limited amount of grazing associated with recreational uses (guiding, hunting, trail riding, etc.) is generally acceptable. This direction is further clarified through individual Resource. Management Zone Direction -Section 2.2.

Where grazing is permitted, "benchmarks" will be left un-grazed to represent local ecosystems. These benchmarks, used as controls in evaluating management practices, must be large enough to allow researchers to detect long term biophysical changes. Benchmarks should include the full range of local ecosystems such as wetlands, riparian areas, grasslands, and deciduous and coniferous forests. If full representation cannot be captured in one large benchmark, the Protected Area -may contain several smaller sites connected through special management of surrounding lands. Livestock will be kept out of benchmarks by natural features, fencing or other management tools. The Ministry of Forest will provide B.C. Parks with administrative assistance on "benchmarks" and grazing management plans.

Management Direction for Entiako

Lakes LRMP

Ensure that subsequent land and resource management and planning activities reflect LRMP direction for the Entiako by identifying in sufficient detail, management concerns unique to the Entiako Protected Area.

- LRMP management intent for the Entiako Protected Area includes the dual objectives of preserving the long-term ecological viability of the area for caribou, while maintaining an acceptable level of mountain pine beetle (MPB) infestation risk to adjacent timber resource values. Preservation of caribou habitat remains the resource management priority, and acceptable strategies for pursuit of MPB objectives in this management may include pheromone baiting, large scale controlled burning, small scale controlled patch burns and single tree disposal.
- The Entiako is a protected area established under the Environment and Land Use Act, and is intended for designation as Class A Park once an ecosystem based management plan has been completed which meets the dual objective under 8.1 above.

Vanderhoof LRMP

The Entiako RMZ forms a corridor about 12 km wide on the east side of the Entiako River, extending from the Nechako Reservoir southwest to Tweedsmuir Park. Fawnie Creek, Van Tine Creek and Capoose Creek drain the area westerly into the Entiako River. Along with the Entiako River and Entiako Lake, Mount Swannell, Tutiai Mountain, Capoose Lake and Cow Lake are the dominant geographic features of the zone.

The zone is comprised primarily by the Nazko Uplands ecosection, with a smaller portion in the Bulkley Basin. The zone's wide range of biogeoclimatic subzones include: SBSmc, SBSmc2 (moist, cold sub-boreal spruce), ESSFmv and ESSFmv1 (very cold, moist Engelmann spruce-Subalpine fir). These subzones are characteristic of higher elevations containing pine and balsam. The Entiako RMZ lies within the rainshadow of the Coast Mountains and is characterized by a dry, continental climate. The summers are typically cool, short, and dry, and the winters are very cold, long, and dry.

The Tweedsmuir-Entiako caribou herd (provincial significance) consists of about 500 animals, which migrate to the low elevation forested habitat in the Entiako zone during the winter months. Before the early 1980's, little information was available on the winter habitat requirements of the Tweedsmuir-Entiako caribou, and in 1983, B.C.

Environment began monitoring radio-collared caribou to determine basic seasonal movements and habitat use. From 1985 to 1988, an intensive study was conducted on winter range selection to determine potential impact of timber harvesting on the caribou herd (The Management Strategy and Options for the Tweedsmuir-Entiako Caribou Winter Range: Cichowski 1989). This study showed that in the winter caribou selected mature forested habitats and foraged primarily by digging through the snow (cratering) to obtain terrestrial lichens. Arboreal lichens were also used to a lesser extent, but they became more important when snow depth or hardness impeded digging by caribou. Terrestrial lichens are slow growing, poor competitors with other plants, and are associated with very. mature forests on drier, less productive sites. The valuable habitat types were those dry types with the highest portions of dry lichen or lichen-moss. The identified critical core providing winter range habitat occurs along the Entiako River. Additional studies indicate that the caribou population appears to be declining and although limiting factors have not been determined completely, predators are suspected of having a strong influence.

The Entiako River often retains open water during the winter months and provides trumpeter swan habitat at the north end of Entiako Lake.

The zone is considered to have moderate to high metallic potential for gold, silver, molybdenum and copper deposits. There are a number of recorded occurrences of copper, molybdenum and gold near Capoose Lake, in addition, several claim blocks are located north of Capoose Lake and south of Tutiai Lake. The Wolf prospect, north of Cow Lake, is the most developed prospect to date, with extensive tenure covering the prospect area. Exploration work has thus far indicated a resource of 3.9 million tons grading 0.06 oz./ton gold for a total of approximately 234,000 oz. gold.

Several tourism operators use the lakes, streams, and pristine wilderness in this area. The unaccessed wilderness lakes support wild trout stocks adjacent to the large wilderness of Tweedsmuir Park. There is a hiking trail up to the summit of Mt. Swannel, from the mouth of the Entiako River. The peak of Mt. Swannel has historically been used by the forest service for a fire lookout. A lightly traveled wilderness canoe route runs from Fawnie Creek through to Entiako Lake, and down the Entiako River to Knewstubb Lake.

This zone lies within traditional territories used by the Ulkatchot'en (Ulkatcho) First Nation.

Entiako RMZ

Resource Management Zone Intent

To manage as a **Protected Area**, emphasizing caribou conservation goals and backcountry wilderness recreation.

Water

Maintain existing hydrological regimes, geomorphic processes and sediment loading levels.

- Prohibit water control structures (diversions or dams) for commercial hydroelectric generation

Fisheries and Lakeshore

Maintain natural wild fish stocks

- Consider lakes and streams that should be regulated for catch and release angling
- Maintain Fawnie Cr. high quality angling experience

Heritage and Culture

Recognize cultural and heritage values.

- Inventory and designate cultural and heritage values.

Mitigate impacts on archaeological sites

- Identify archaeological sites.

Recreation and Tourism, Trapping and Guiding

Provide opportunities for backcountry recreation (angling, guiding and tourism) for the Ulkatchot'en and tourism operators, while minimizing impacts on other natural resource values

- Identify the hiking trail from the Entiako River to the summit of Mt. Swannel from the Entiako River in a forest district hiking trail
- Air access on designated sites minimizing wildlife disturbance
- Minimal permanent facility development, except for the rustic-style facilities at existing sites.
- Specific sites are functionally and visually compatible with natural setting.
- Small boat and motor use on lakes is acceptable.
- Maintain Visually Sensitivity within this RMZ.
- Maintain traditional levels of consumptive uses (e.g. trapping, hunting, firewood) within population constraints. (To be detailed in the Protected Areas management plans.)
- Maintain or establish opportunities for a diversity of wildlife use experiences (i.e. consumptive or nonconsumptive) to be managed by Ministry of Environment wildlife biologists.
- Establish maximum use levels for quality lakes (i.e. 5 anglers per season).
- Trapping is considered a compatible use.
- Maintain the high quality wilderness experience in a relatively undisturbed natural environment
- Maintain low densities of recreational use

Wildlife

Recognize the provincial significance of the Entiako-Tweedsmuir caribou herd

- Support scientific research opportunities in the RMZ
  - investigate predator-prey relationships
  - monitor and compare vegetation succession on controlled burn areas and wildfire areas
- establish 'control' plots for monitoring effects research supplies more information

Manage for a goal of maintaining current biodiversity levels.

- Periodically inventory wildlife populations
- Consider the option of developing a predator prey management plan as monitoring research supplies more information

Maintain caribou habitat and population requirements

- Short term : protect high quality caribou habitat from disturbance
- Long term : develop a winter habitat regeneration strategy to provide caribou habitat over the long term (controlled burning, fire management plan)

Recognize wolf/caribou/moose interactions

- Recognize the role of trapping and recreational hunting as a tool in managing these populations

Forest Health

Fire and epidemic pest management will consider other resource values, and maintenance of ecosystem values (natural processes) e.g. lichen / mature habitat

- Controlled burns may be considered for:
  - habitat enhancement (e.g. ungulates and bear)
  - biodiversity
  - pest management, where there is risk of epidemic infestation to adjacent RMZ's
- Consider initial fire attack important to identified values in this RMZ
- Beyond initial attack, assess wildfires for risk to adjacent RMZ's and the values described for the Entiako RMZ.
- Give priority to health of forests critical to fish and wildlife habitat.
- Inventory timber stands and develop plan to address spruce and mountain pine bark beetle.
- Use low impact techniques such as fall and burn or trap trees to control beetle populations.

- Pre-planning (Fire Management Plans) should occur to outline strategies for forest health (pest control) and fire management in this RMZ, between the Vanderhoof and Lakes Forest Districts, and B .C. Environment. A caribou biologist should be involved and the public should be consulted. Endemic pests and their populations should be recognized in these plans, and considered a valued part of the ecosystem. Planning should coordinate with the Tweedsmuir Park Management Plan.
- This RMZ should be annually monitored for pest populations

Agriculture/Range

Prevent significant ecosystem impacts from these uses

- No cultivated agriculture will be considered.
- The limited amount of grazing associated with recreational uses (hunting, trail-riding etc.) is generally acceptable.

Minerals and Energy

Innovative mineral exploration strategies will facilitate integration of significant mineral opportunities with other resource values in the area.

- Exclude all claims from the Entiako Protected Area. Exclude all claims from the Entiako Protected Area. The long-term objective is that all current claim areas will be included in the Entiako Protected Areas after lapse of the claims.
- The method of designating the Entiako Protected Areas needs to consider the potential future needs for access to existing mineral claims.
- Exclude the Wolf property from the Entiako Protected Area, but it must be included in the Protected Area at the first review of the Vanderhoof LRMP after the claims lapse. Only other uses consistent with the Entiako Protected Area will be considered.
- No additional road development to the west of existing trails
- Revise the northwestern boundary to reduce the proximity to the Entiako River valley (quick claim to be proposed by Lucero Resources)
- Block the access road physically and with signed legislative restrictions outside of exploration periods. Signage will detail caribou and protected area access management considerations. No hydro or road development for exploration purposes shall cross through the adjacent Entiako Protected Area. Road upgrading of the existing access road made be done if bulk sampling is required. Some rerouting or re-engineering may be required for compliance with the F.P.C.
- If a mine is developed at this site, full 'compliance with the mine development review process will be required. B.C. Environmental Assessment and Federal Environmental Review processes should recognize the identified values in this RMZ.
- Exploration can continue on those portions of the Capoose property that lie within the proposed Protected area, but these areas will be included in the proposed Entiako Protected Area immediately upon lapse of the claim. Only other uses consistent with the Entiako Protected Area will be considered. The possibility of a quit claim on the portions of the property within this zone should be negotiated/considered by the property holder and MEI - Energy and Mineral Division
- Exploration can continue on the Swan mineral claim, but it will be included in the Entiako proposed protected area immediately upon its lapse. All other uses should be consistent with the strategies of this RMZ. Exploration activities should continue to be accessed by helicopter. If application is made for mine development, careful consideration of new access road routing, to minimize impacts on caribou is extremely important. Access control, to limit the access to mining activities is necessary.

Access

- No road access should be developed unless required for fire control, with full consideration for other resource values. (See biodiversity strategies).
- Full reclamation and access closure would be required. (See mining strategies re: access)
- No new hydro development, including hydro lines, should be considered in this zone.
- No motorized vehicle use except by licensed tenure holders (e.g. trappers, guides)
- No hydro or road development shall cross through the Entiako proposed protected area.